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CONTENTS AND DIGEST

The Complement Fixation Test in the Diagnosis of Tuberculosis: A Clinical and Laboratory Study. Henry F. Stoll, M.D., and Lester Neuman, M.D., Washington, D. C.....1043

Lack of agreement of reports on complement fixation test in tuberculosis. Its lack of standardization. Puzzling questions of diagnosis. Review of recent literature on complement fixation in tuberculosis. Reports of the test made in the Walter Reed Hospital. Technic. Summary and conclusions.

Immunization Against Measles. D. L. Richardson, M.D., and Hilary Connor, M.D., Providence, R. I.....1046

Measles as the most widespread and common of infectious diseases. Lack of work looking toward immunization against measles. Methods employed by the authors. Passive immunization. Case report. Active immunization. Experiments. Conclusions.

The Relation of the Lymphocyte to Cancer. L. D. Bristol, Dr.P.H., Augusta, Maine 1048

Development of the blood cells in the embryo. Predominance of lymphocytes. Probability that the lymphocyte is controlled by an antibody under normal conditions; that it is the potential father of normal body cells, and that the uncontrolled lymphocyte is the originator of tumor cells. A theory of the origin of cancer.

The Needs of Medical Education as Revealed by the War. Edward L. Munson, M.D., Washington, D. C. 1050

Classes of candidates for the personnel of the Medical Reserve Corps. Nature and standards of the examinations. Selection of men for medical training camps. Elimination of the unfit. Reclamation work. Qualifications of candidates. Relations of qualifications to standards of medical schools. Psychologic tests. Qualifications of alleged specialists. Conclusions.

The Epidemic Respiratory Infection at Camp Cody, N. M. Frederick H. Lamb, M.D., and Edward B. Brannin, M.D., Camp Cody, Deming, N. M. 1056

History of epidemic. Administrative measures for its control. Laboratory findings in influenza. Clinical observations of this condition. Pneumonia and laboratory findings in that disease. Pathology and postmortem bacteriology. Clinical observations of pneumonia. Complications. Treatment. Conclusions.

Nontraumatic Hemorrhage of the Suprarenal: Report of Case. Frank B. Lusk, M.D., France, and Arthur Brumbaugh, M.D., Camp Dodge, Des Moines, Iowa 1062

Streptococcus hemolyticus the probable exciting cause. Clinical picture and diagnosis of a severe septicemia. The condition and position of the descending colon and an underlying pyramidal hematoma. Failure of microscopic examination to reveal exact cause of hemorrhage.

(Continued on next page)

MEDICAL MOBILIZATION AND THE WAR 1080

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CONTENTS AND DIGEST— Concluded

Recurrence of Oral Syphilitic Lesions During Treatment with Mercury: Report of Three Cases. G. O. Scott, M.D., and G. H. J. Pearson, M.D., Etchinghill, Kent, England.....1064

Chancre redux as a frequent form of syphilitic recurrence. Autoreinfection. Frequency of skin rashes, mucous patches and condylomas as recurrent signs. Interrupted courses of mercury and potassium iodid. Inadequacy of British War Office course of treatment. Failure to prevent recurrent oral lesions. Report of cases. Comment. Suggested modification of War Office treatment.

Enterostomy as an Emergency Measure in the Surgical Treatment of Intestinal Obstruction in Cases of General Peritonitis Following Purulent Appendicitis. A. L. Hageboeck, M.D., and L. H. Kornder, M.D., Davenport, Iowa 1066

Serious aspects of appendicitis. Primary operation and subsequent treatment. Result of the spontaneous development of fecal fistulas. Intra-abdominal conditions. Artificial fecal fistula. Comment and conclusion.

Increased Tolerance and Withdrawal Phenomena in Chronic Morphinism: A Review of the Literature. A. G. DuMez, Ph.D., Washington D. C...1069

Increased tolerance and its causes. Review of literature. Theories of the production of this tolerance. Destruction of morphin in the body. Tolerance of the brain for morphin. Destruction of morphin as a cause for tolerance. Analogy between immunity from vaccines and tolerance for opium. Toxin theory of Pettey. Withdrawal phenomena. Conclusions.

Torsion of an Enlarged Hydatid of Morgagni as the Cause of Acute Abdominal Disturbance. Chester H. Waters, M.D., Omaha.....1072

Rarity of disturbances from cysts of this type. Report of case of enlarged hydatid of Morgagni with torsion of pedicle, causing serious abdominal disturbance.

CLINICAL NOTES, SUGGESTIONS AND NEW INSTRUMENTS

Report of an Unusual Case of Bacteremia. H. H. Chamberlin, M.D., and A. J. Minaker, M.D., San Francisco 1073

Colorimetric Standardization of the Cell Suspension in the Wassermann Reaction. Rawson J. Pickard, M.D., San Diego, Calif. 1074

Coincidental Acute Perforation of a Duodenal Ulcer, and Blocking of the Cystic Duct by Stone, with Acute Cholecystitis. J. R. Buchbinder, M.D., Chicago 1074

A Simple Method for the Defibrination of Blood. Francois H. K. Reynolds, M.D., Washington, D. C......1075

EDITORIALS

"The Needs of Medical Education as Revealed by the War".....1076

Professional qualifications of the men in the medical officers' training camps.

Green Foods and Vitamins.....1077

The safeguard to health in fruits and vegetables.

The Synthesis of Hippuric Acid in the Body.....1078

Participation of the liver, as well as the kidney, in its combination.

CURRENT COMMENT

Does the Heart Respond to Fatigue? 1078

The increase of irritability caused by fatigue products.

The Relative Return in Law and Medicine.....1079

Average incomes of Harvard graduates.

A Jury in Dry Humor.....1079

Decision that a "patent medicine" which will intoxicate is an intoxicating liquor.

Cheap but Effective Advertising....1079

The indirect method, through physicians.

The Menace of Malaria.....1080

A time for concerted effort to eradicate the disease.

ASSOCIATION NEWS 1080

The Victory Meeting.

MEDICAL NEWS 1086

MARRIAGES 1093

DEATHS 1093

PROPAGANDA FOR REFORM 1094

Collosol Cocaine Not Admitted to N. N. R.
Cuprase Not Admitted to N. N. R.

CORRESPONDENCE 1095

"The Needs of Medical Education as Revealed by the War."
Protest Increase in Tax Under Narcotic Law.
Greetings from Roumania.
Medical College Fund Not Reduced.

QUERIES AND MINOR NOTES 1098

Spalteholz Method of Clearing Specimens.
Number of Deaths Among Physicians in the United States and Canada from 1915 to 1919.
Rejections in the Draft and Their Causes.
Proflavine Oleate.
Buttermilk Therapy.
Carbon Tetrachlorid as a Fire Extinguisher.

MEDICAL EDUCATION AND STATE BOARDS OF REGISTRATION

Coming Examinations — New York September Examination—New York Report....1099

BOOK NOTICES 1100

MEDICOLEGAL

Standards for Treatment with Roentgen Rays — Waiver of Privilege by Implied Consent 1100

SOCIETY PROCEEDINGS 1101

Coming Meetings.

CURRENT MEDICAL LITERATURE

American Medical Journals

Specific Dynamic Action of Protein — Effect of Gland Extracts on Bile Secretion — Baker's Yeast as Food for Man — Compressed Yeast as Food for Growing Organism — Function of Nucleus of Living Cell —Health Administration for Industrial Diseases — Influenza Epidemic in Tuberculosis Hospital 1102

Tuberculin in Treatment of Pulmonary Tuberculosis — Bacteremia and Toxemia — Abdominal Hysterectomy — Cultivation of Meningococcus — Wassermann Reaction — Estivo-Autumnal Malarial Infections—Newly Formed Connective Tissue 1103

Virus of Poliomyelitis in Nasopharynx—Renal Function in Intestinal Obstruction — Renal Function in Proteose Intoxication — Bacteriologic Analysis of Milk—Specificity and Formation of Proteolytic Enzymes — Rat-Bite Fever Spirochete 1104

Exclusion of Air in Cultivation of Gonococcus —Germicidal Power of Oils and Oil-Dissolved Substances — Hemolytic Streptococci in Tonsils as Secondary Invaders — Double Sugar Medium.....1105

Prepuce as Grafting Material — Prevention of Influenza — New Technic for Suspension of Kidney — Pneumothorax in Tuberculosis — Bacteriology of Pneumonia — Endemic Malaria as Military Problem.....1106

Streptococcus Infections of Lungs — Susceptibility of Convalescents from Measles...1107

Foreign Medical Journals

Quinin in Malaria—Intramuscular Injections of Collosol Manganese in Malaria—Arsenic in Malaria—Intestinal Protozoal Infections in Population of Great Britain.....1107

Hyperglycemia and Glycosuria—Febrile Acidosis in Scarlet Fever — Heart Massage for Resuscitation—Heart Massage in Chloroform Poisoning 1108

Treatment of Leprosy — Hysterical Hiccup—Hysterical Left Facial Paralysis, etc.—Induced Convergence of Eyeball After Aerial Shock—Tuberculous Endocarditis 1109

Meningeal Hemorrhage in Typhoid—Parotitis in Soldiers—Peptic Ulcer After Gastro-Enterostomy—Infant Morbidity During the War—Physiotherapy of Sciatica—Influenza —Nervous Manifestations of Influenza..1110

Influenza—Quinin in Prophylaxis of Influenza —Cysticercosis in Young Girl — Adiposis Dolorosa—Nonnephritic Albuminuria—Influenza—Child Welfare Work in Brazil...1111

Ataxia with Spasmophilia—Typhoid Spondylitis—Acquired Mental Impairment—Syphilitic Trigeminal Neuralgia, etc—Oxytocic Action of Quinin—Influenza in Venezuela....1112

Acute Nephritis—Influenza — Epitheliomas of the Hand—Oxaluria — Diplopia as Optical Illusion—Eclampsia and Venesection—False Cancer in Stomach and Rectum—Analgesia for Inoperable Cancer 1113

The Oculocardiac and Nasocardiac Reflexes—Sarcoma of the Middle Ear — Paroxysmal Tachycardia—Trichinosis—The Electrocardiogram After the Heart Stops Beating—Epidemic Typhus on Island—Familial Mongoloid Idiocy 1114

Hygiene in Panama, Cuba and the United States—Tsutsugamushi Fever—Lipoid Cleavage Products in Spinal Cord—The Donath-Landsteiner Reaction—Japanese and Chinese Drugs—Acromegaly Without Pituitary Tumor—Influenza—Necropsy Findings in Influenza—Streptococci in Influenza—Complications of Pseudo-Influenza—Hypersusceptibility to Certain Drugs.....1115

Drugs to Aid Delivery—Deafmutism in Sweden—Habitual Constipation 1116

TONICS AND SEDATIVES—BOOKS RECEIVED.....Adv. Page 20

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THE COMPLEMENT FIXATION TEST IN THE DIAGNOSIS OF TUBERCULOSIS

A CLINICAL AND LABORATORY STUDY *

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AND

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WASHINGTON, D. C.

Not all of the reports on the complement fixation test in the diagnosis of tuberculosis have recorded the high degree of accuracy that Craig[1] and Miller[2] ascribe to it. This is in large part due to the fact that the method of performing the test has not as yet been standardized. But even with a uniform technic, the results of different observers would not have the same high percentage of agreement with the clinical diagnosis as obtains with the Wassermann test in syphilis. This is due to the many difficulties that beset the clinician in classifying his tuberculosis patients. The man whose diagnostic zeal is greater than his experience will detect tuberculosis where none exists, and even those of large experience differ as to when a case should be termed "arrested" and when "cured." No more puzzling problem confronts the internist than to decide whether there is any relation between the vague toxic symptoms that a patient presents and the old and apparently healed tuberculosis which the examination reveals. It is in such cases that the clinician looks to the laboratory for help. Will the complement fixation test as now performed fill the want?

At this time it does not seem necessary to us to review completely the literature, as this has recently been well done by Moon,[3] von Wedel,[4] and Stivelman.[5] Therefore, aside from a summary of the subject, only those articles which have appeared since these reviews will be discussed in any detail.

The first investigators to use the complement fixation test for the diagnosis of tuberculosis appear to have been Widal and LeSourd,[6] followed by Bordet and Gengou,[7] Wassermann and Bruck,[8] Caulfield,[9] Laird,[10] Hammer,[11] Calmette,[12] and a host of others, with varying success.

Miller,[2] using a bacillary emulsion as an antigen, reports nearly 100 per cent. positive results in active cases of tuberculosis, and 100 per cent. negative results in known nontuberculous cases. Craig,[1] using an alcoholic extract of tubercle bacilli, found 92.6 per cent. positive complement fixations in active cases, and 66.1 per cent. positive in inactive cases. In 150 cases with a positive Wassermann test and no demonstrable lesion in the lung, the reaction was negative. One hundred cases of diseases other than syphilis and tuberculosis were all negative. He regards the test as one of established reliability. Burns, Slack, Castleman and Bailey[13] obtained similar favorable results.

Opposed to such favorable reports is the work of Corper[14] and Corper and Sweany,[15] whose results were not constant and who found many cross fixations with positive Wassermann serums.

Wilson[16] emphasizes the importance of examining each guinea-pig serum for its complement value and especially its fixability with tuberculosis antigen and tuberculous serum. This is recommended even in a pooled complement. A lipoid-free bacillary antigen is also described in which the tubercle bacilli are grown on glycerin broth, the cultures filtered, and the lipoids extracted from the organisms recovered from the filtration with alcohol and ether. The dried organisms are then emulsified in salt solution. This is a preliminary report on technic and does not include any case reports.

Von Wedel,[4] using the Wilson antigen, reports a very successful series of cases. He makes the interesting observation that many serums from known tuberculous cases show a negative reaction immediately after bleeding, but if kept in the refrigerator five or six days under sterile conditions, they become positive. He states that this does not occur in known nontuberculous cases. He obtained 100 per cent. negative results in known nontuberculous cases, nearly 100 per cent. positive results in primary and active tuberculous cases, and 25 per cent. positive results in the partially active and inactive cases. As for moribund patients, the showing was usually negative. He emphasizes the importance of pooling the serum of at least six guinea-

* From the Laboratory and Tuberculosis Services of the Walter Reed General Hospital.

1. Craig: Am. J. M. Sc. **150:** 781, 1915.
2. Miller, H. R., and Zinsser, J.: Proc. Soc. Exper. Biol. & Med. **13:** 134, 1916. Miller, H. R.: Application of the Complement Fixation Test to Tuberculosis, J. A. M. A. **67:** 1519 (Nov. 18) 1916.
3. Moon, V. H.: A Further Consideration of Complement Fixation in Tuberculosis, J. A. M. A. **71:** 1127 (Oct. 5) 1918.
4. Von Wedel, H.: J. Immunol. **3:** 351-369, 1918.
5. Stivelman, B.: Am. Rev. Tuberc. 546-550, 1918.
6. Widal and LeSourd, quoted by Shennan and Miller: Edinburgh M. J. **10:** 81, 1913.
7. Bordet and Gengou: Compt. rend. Acad. d. sc. **137:** 351, 1903.
8. Wassermann and Bruck: Deutsch. med. Wchnschr. **32:** 449, 1906.
9. Caulfield: J. M. Res. **24:** 122, 1911.
10. Laird: J. M. Res. **27:** 163, 1912.
11. Hammer: München. med. Wchnschr. **59:** 1750, 1912.
12. Calmette and Massol: Compt. rend. Soc. de biol. **75:** 120, 1912.
13. Burns, N. B.; Slack, F. H.; Castleman, Philip, and Bailey, Karl: Application of the Complement Fixation Test to Tuberculosis, J. A. M. A. **68:** 1386 (May 12) 1917.
14. Corper: J. Infect. Dis. **19:** 315, 1916.
15. Corper, H. J., and Sweany, H. C.: Complement Fixation Tests in Tuberculosis, J. A. M. A. **68:** 1598 (June 2) 1917.
16. Wilson, M. A.: J. Immunol. **3:** 345-350, 1918.

pigs as complement or the testing of the complement value and fixability of a single animal.

Moon[3] reports a series of cases in which he used a bacillary emulsion antigen prepared from dried bacilli. He states, however, that since compiling this report he has used a fresh, virulent bacillary antigen with much greater success. With the dried antigen, in 156 tuberculous cases, 85.2 per cent. were positive. Of these, twenty-one cases of incipient tuberculosis were positive in 87.5 per cent.; forty-nine cases of moderately advanced tuberculosis were positive in 85.7 per cent., and eighty-three cases of far advanced tuberculosis were positive in 84.3 per cent. Forty per cent. of sixty-one cases of suspected tuberculosis were positive. Twenty-six cases of other diseases showed 26 per cent. positive results. Of 100 positive Wassermann serums, thirty-eight gave a positive reaction. There were twelve positive tests among 100 young, healthy adults. Two of these were found to be tuberculous. He believes the test to be one of known clinical value, and as valuable in tuberculosis as the Wassermann reaction in the diagnosis of syphilis.

Petroff[17] describes a new glycerin extract tubercle bacillus antigen, for which he claims simplicity of preparation and reliability.

Brown and Petroff[18] found positive reactions in 51 per cent. of the incipient cases of tuberculosis, 73 per cent. positive in the moderately advanced cases, and 81 per cent. of the far advanced cases. They believe that as a case advances it becomes more active clinically and serologically. In 139 cases with positive sputum, 90 per cent. showed a positive complement fixation test, and when activity was also present, the positive results were 98 per cent. Cases with blood spitting were much more likely to be positive than those without. They do not believe that the presence of a positive Wassermann reaction has any bearing on the complement fixation for tuberculosis. They state that a positive reaction indicates that an antibody is, or has been, circulating in the blood stream. The intradermic test was found to be more sensitive than the complement fixation. They place the reaction among the tests of known clinical value.

Lange,[19] using four different antigens, namely, the bacillary emulsion of Miller, a sodium hydroxid extract, a methyl alcohol extract and the potato broth culture filtrate of Petroff, examined 864 serums. Fixation of some degree was found in 51.5 per cent. of the tuberculous cases, while nontuberculous cases were positive in 13.6 per cent. The alcoholic antigen gave the highest proportion of strong fixations in the clinically tuberculous cases, and the sodium hydroxid antigen, the lowest. With nontuberculous cases, the greatest proportion of strong fixations was obtained with the sodium hydroxid antigen, the smallest with the potato broth filtrate antigen. Of 147 positive Wassermann serums, twenty-six, or 18.7 per cent., were positive. Four of these were clinically tuberculous.

Stivelman[5] reports a series of 205 cases, twenty-two of which were nontuberculous, using Miller's antigen. The Wassermann reaction done as a routine showed four positive reactions, though none of the latter could be diagnosed as syphilitic. He found that about 50 per cent. of the tuberculous cases, active and inactive, gave a positive fixation. Seventy-four per cent. of twenty-five inactive cases with positive sputum gave a complement fixation, whereas only 28 per cent. of twenty-five active cases with negative sputum gave a positive reaction. Inactive cases with negative sputum gave 41 per cent. positive tests, while in active cases with negative sputum a positive reaction was obtained only in 28 per cent. He was particularly impressed with the exceedingly low proportion of incipient cases giving a positive fixation, the active being 15.8 per cent. and the inactive 39.5 per cent. He was unable to corroborate the favorable report of Miller.

A complement fixation test was made in over 100 cases that were referred to the tuberculosis section of the medical service of the Walter Reed General Hospital, for known or suspected tuberculosis. A few patients were seen only once. The others were examined several times, and most of them were in the wards for varying periods of observation. All patients about whom these was any question as to diagnosis were examined by two or more qualified medical officers and, with very few exceptions, stereoroentgenograms were taken after the examination was made. A stereoscope in the ward made possible an intimate study of the patient and his roentgenogram.

Depending on the symptoms, physical signs and roentgenoscopic findings, the cases were classified into six groups:

1. Signs of small healed lesion present (usually apical). Tubercle bacilli not demonstrated, (*a*) symptoms absent or due to some other cause, and (*b*) symptoms suggestive but inconclusive.

2. Small lesion; signs suggesting activity. Symptoms definite (tubercle bacilli may or may not be present).

3. (*a*) Large lesion; parts of one or more lobes involved; symptoms few or absent, and (*b*) same lesion as in 3 *a*, but symptoms of activity. Prognosis for arrest, good.

4. Extensive lesions and complications. Prognosis poor.

5. Possibly tuberculous; (*a*) inconclusive signs, suspicious symptoms, and (*b*) signs of small healed lesions; symptoms suggestive but inconclusive (Group 1 *a*).

6. Nontuberculous cases.

The percentages given should be accepted with some reservation because of the small number of cases in certain groups.

Group 1 *a* (seventeen cases) comprises those that showed evidence of an old and apparently healed tuberculous lesion and was made up of three classes of cases: (1) those who had one or more symptoms suggestive of tuberculosis but in whom a careful study demonstrated some other cause; (2) those presenting the residue of some acute pulmonary infection which bore no relation to the old tuberculous process, and (3) a small group with no symptoms but whose physical signs had excited suspicion. In this group, the diagnosis of which was given as "no sign of active tuberculosis," the complement fixation test was positive in 6 per cent.

The necessity for the second subdivision of this group, which may be designated as having "signs pointing to an old lesion with ill defined symptoms possibly due to tuberculosis," will be questioned by those who experience little difficulty in classifying their cases. We have not infrequently been in serious

17. Petroff, S. A.: Am. Rev. Tuberc. **2**: 525-540, 1918.
18. Brown, L., and Petroff, S. A.: Am. Rev. Tuberc. **2**: 525-540, 1918.
19. Lange, L. B.: Am. Rev. Tuberc. **2**: 541-545, 1918.

doubt as to whether or not certain symptoms were due to a lesion when activity could not be established either by physical signs or by roentgenoscopic studies. This group of eleven gave 18 per cent. positive reactions.

The number of really incipient cases (Group 2) is unfortunately small, as it is in this group, in which tubercle bacilli are so often not to be found, that we most need the assistance of the complement fixation test. Our cases were so few—only eight in all—that no deductions of value can be drawn. Thirty-seven per cent. gave a positive reaction. Some of the more advanced cases studied seem to show that the incipient stage may sometimes merge into a moderately advanced stage with no symptoms to herald its progress. We are inclined to believe that some of the cases that were

TABLE 1.—RESULTS IN ACTIVE, INACTIVE AND POSSIBLY ACTIVE CASES

	No. of Cases	Per Cent. Positive
Total active cases of tuberculosis	36	58
A. Tubercle bacilli in sputum	27	67
B. Without tubercle bacilli in sputum	9	33
Possibly active tuberculosis	19	16
Evidence of old inactive lesion	17	6

ultimately diagnosed as not clinically tuberculous would have been called incipient had opportunity not been afforded for careful study including stereoroentgenoscopic examination. Moreover, in a few instances, the roentgen ray revealed that our apparently incipient case was in reality moderately advanced. Two of four moderately advanced cases, with few or no symptoms, reacted positively.

The number of moderately advanced cases with symptoms of activity, yet presenting a good prognosis, was seventeen, and 65 per cent. gave a positive test. In fifteen, there were tubercle bacilli in the sputum, and of these 62 per cent. gave a positive reaction. Eleven cases classified as actively progressing, with a poor prognosis, gave 64 per cent. positive. In all but one of this group the sputum was positive. In this case bacilli were abundant in the bronchial secretions at necropsy. Of the group "possibly tuberculous," those having signs of an old healed lesion have already been considered (Group 1 *b*). There were eight other patients in whom the evidence of an old lesion was lacking, but who had a suspicious yet inconclusive history. Among these were several cases of serous pleuritis, some of which were probably tuberculous. This group as a whole gave 15 per cent. positive reaction. In fifty-one patients the physical signs did not indicate an old tuberculous lesion, and their symptoms were due to other causes. The reaction was positive in 10 per cent. For practical purposes we may add to this group those who had an old healed process but no activity, making a total of sixty-eight patients suffering from various conditions, clinically free from tuberculosis, with 8 per cent. giving a positive fixation test.

The serums from forty individuals, especially selected because of their very robust condition, were examined and, with the exception of one case, all were negative. This case showed a "single plus" reaction (50 per cent. inhibition). However, when the test was repeated several times on fresh serum, it was found constantly negative.

The complement fixation for tuberculosis was done on 228 different serums, showing a positive Wassermann reaction. The Wassermann reactions were made with a human hemolytic system and a cholesterinized human heart antigen. In this series, 486 examinations were made, as a number were repeated several times. Eleven of these serums showed a positive fixation for tuberculosis. Three of these patients were found to be tuberculous, the other cases apparently being nontuberculous. The latter may belong to the group of cases, described by Brown,[18] in which the test remains positive after a cessation of activity.

TECHNIC

Serum.—The patient's serum is removed from the clot as soon as possible. It is inactivated for thirty minutes at 56 C. One-tenth c.c. undiluted serum is used for the test and 0.15 c.c. as a control for anticomplementary action. When used again, the serum is again inactivated for ten minutes at 56 C.

Antigen.—The lipoid-free tubercle bacillus antigen described by Wilson[16] was used. The amount of antigen used for each test contained approximately 10,000 dried tubercle bacilli. It was never anticomplementary in four times the amount used in the test. Before each test, the amount of antigen used was diluted and inactivated at 56 C. for thirty minutes.

Complement.—The pooled serum from at least six guinea-pigs was always used in a 1 : 10 dilution. After titration with sensitized cells, two units are used in the test.

Hemolytic System.—One-tenth c.c. of 5 per cent. washed sheep corpuscles is used, sensitized with an equal amount of diluted amboceptor containing two standard units. Sensitization is done in the water for thirty minutes at 37.5 C.

Controls.—Controls are run on the antigen for anticomplementary action and specificity, on the serum for anticomplementary action and specificity, on the complement for stability (system control), and on the sensitized cells for reading control.

The complement titration and the test are incubated in the water-bath at 37.5 C. for fifteen minutes, and the fixation for one hour.

TABLE 2.—RESULTS IN THE NONTUBERCULOUS

	No. of Cases	Per Cent. Positive
Symptoms or signs of pulmonary disease, but diagnosed as not tuberculous	51	10*
Especially robust individuals	40	0
Nontuberculous syphilitics	225	3.5

* Two cases which at first gave a positive result, but later a negative, not included.

While stationed at this post, Lieut. H. von Wedel inaugurated successfully the complement fixation test for tuberculosis in the routine of the laboratory. A few of the cases reported in this series were examined by him. However, we are not convinced that his observation regarding the difference in reaction of a fresh serum and one kept from five to seven days is diagnostically correct. He believes that many serums from tuberculous cases which are negative on the day following the taking of the blood become positive when kept in the refrigerator for from five to seven days under sterile conditions. Rapoport[20] made a similar observation in his study of the fixation test in influenzal pneumonias, using strains of *B. influenzae* as antigen. Of all serums in this series that were examined,

20. Rapoport, F. H.: The Complement Fixation Test in Influenzal Pneumonia, J. A. M. A. **72**: 633 (March 1) 1919.

the examinations were made on the day following bleeding and again one week later. However, we have recorded only the first result in our statistics in this paper, reserving the results of the second examination until such time as we are convinced of the real value of von Wedel's observation.

A Wassermann test with a cholesterinized antigen has been made in all of the cases. We cannot agree with those who assert that tuberculosis will give a positive reaction in the absence of syphilis if a cholesterinized antigen is used. Too often the failure to obtain a history of infection or evidence of syphilitic disease is considered sufficient evidence to exclude syphilis. Seven per cent. of our forty-one definite cases of tuberculosis gave a positive Wassermann reaction, and all gave a history of a venereal sore.

SUMMARY

1. Forty robust men of the surgical service all gave a negative fixation test.

2. Sixty-eight individuals, when first seen, presented some symptoms, or physical signs, suggesting tuberculosis, yet were ultimately diagnosed as not clinically tuberculous. The tuberculous fixation test was negative in 92 per cent. of this group.

3. Of nineteen patients about whom a reasonable doubt existed and who were classified as "possibly tuberculous," 15 per cent. gave a positive reaction.

4. Of eight incipient cases, 37 per cent. gave positive reactions.

5. Four with moderately advanced lesion, yet few or no symptoms, gave 50 per cent positive.

6. Of seventeen patients with moderately advanced disease and definite symptoms of activity, but in whom the prognosis seemed good, 65 per cent. were positive.

7. Of eleven with advanced disease and a poor prognosis, 64 per cent. were positive.

8. Of twenty-seven active cases with tubercle bacilli in the sputum, 67 per cent. were positive.

9. Of nine active cases without tubercle bacilli in the sputum, 33 per cent were positive.

CONCLUSIONS

1. It is at once apparent that the practical utility of the complement fixation test in the diagnosis of tuberculosis is limited by the fact that the highest percentage of results obtains in the cases in which its need is least felt, namely, the obvious cases with tubercle bacilli in the sputum.

2. Nevertheless, from our experience, it would seem that with suspicious symptoms and suggestive, yet inclusive signs, a negative fixation test, using the method herein described, increases to a considerable degree the probability of the nontuberculous nature of a given case.

3. With the same symptoms and signs, a persistently positive reaction probably signifies an active tuberculosis.

4. A positive reaction occurring with neither symptoms nor signs does not justify a diagnosis of active tuberculosis, though it is quite probable that there has been an active process recently. In such a case, roentgenoscopy should be employed and the patient observed for several months.

5. With frank signs and symptoms, yet with no tubercle bacilli in the sputum, a negative test cannot outweigh the clinical evidence, though in all such cases a Wassermann test should be made.

6. The diagnosis of tuberculosis is many times one of great difficulty. A careful history, a thorough examination, repeated sputum examinations and roentgenoscopic studies are all of recognized importance and cannot be replaced by any complement test yet devised.

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IMMUNIZATION AGAINST MEASLES*

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Measles is perhaps the most widespread and common of all infectious diseases. Practically all human beings are susceptible to it. If one escapes a childhood infection, adult life is no protection. No age, sex, race or climate is exempt. Contrary to popular conception, it is a disease serious to life. In the year 1913 it was the cause of 8,108 deaths in the registration area of the United States, embracing 65 per cent. of the total population. In the same year, there were 5,498 deaths from scarlet fever. While the mortality is highest in children under 5 years of age, and particularly under 3, the recent experience in the army camps of this country shows that it may produce a high mortality among adults under certain conditions.

Methods of controlling this disease in private life or in institutions have been of little avail, so that any new method that bids fair to produce results should receive a trial.

Very little has been attempted toward the immunization against measles. In 1915, Dr. Charles Herman of New York reported some work done by him.

His experiments were suggested by the fact that children under 6 months seldom contract the disease, or if they do contract it they have it in light form. Forty infants were inoculated. The virus was collected on cotton swabs from the nose of patients twenty-four hours before the appearance of the rash. These swabs were rubbed gently over the nasal mucosa of the forty infants. The majority of the infants showed no distinct reaction, fifteen had a slight rise in temperature, and in a few instances a small number of spots were noted on the face and body. Since then, four of the forty (being over 1 year of age) have been in intimate contact with cases of measles and none have contracted the disease. Two others of the forty were reinoculated at the age of 21 and 23 months, respectively, with a negative result.

The attempt at immunization against this disease was suggested by Dr. Charles V. Chapin. The basis of his suggestion was the use of virus and immune serum for immunization against hog cholera. This method has had much success.

The only other attempt to immunize with convalescent serum was reported by Nicolle and Conseil,[1] who used serum from a child, the first case in a family of four children. Two of the other children were not treated, but a child 2 years of age was given serum from the first case, taken on the seventh day of convalescence and ten days after the first symptoms. The

* From the Providence City Hospital.
* Read before the Rhode Island Medical Society, March 7, 1919.
1. Nicolle and Conseil: Bull. de la Soc. méd. d. hôp. de Paris, April 12, 1918.

other two children came down with measles in three or four days, but the 2-year-old escaped, although exposed to the first child and later to his two brothers.

Two methods were followed by us: first, the use of convalescent measles serum alone, and second, the simultaneous inoculation of the patient with both virus and immune serum. From what we know of passive immunity, it is hardly to be expected that a permanent immunity could be induced by the first method. More could be expected of the use of both virus and immune serum. The first method was easiest to apply, as inoculation experiments with virus in institutions require considerable courage and judgment. Three such experiments were done, however.

The first group to be reported on was passively immunized with convalescent serum. The term "passive immunity" is used, although so far as is at present known this immunity might be quite permanent.

The second group, consisting of three patients, was inoculated with both virus and convalescent serum, and it might be conceded that an active immunity resulted.

The opportunity to do this work came in the spring of 1918, when there was much measles in the city. It was so prevalent that in spite of precautions to learn whether children admitted for other diseases had been exposed to measles at home, errors would occur. It so happened that there were instances in which children were admitted with other diseases during the incubation period; and when it developed, they were being treated in the same unit with other patients. It has been our experience that it is impossible to recognize the disease early enough to withdraw such children from among those whom they might infect, to save cross infection.

A careful history of whether the children selected for inoculation had ever had measles was obtained from the parents. Such a negative history is more to be relied on in the case of measles than almost any other infectious disease.

PASSIVE IMMUNIZATION AGAINST MEASLES

Blood Serum Preparation.—Blood was withdrawn from veins on the flexor surface of the elbow. It was collected in sterile test tubes marked with the name of the patient. These test tubes were placed in the refrigerator over night. Next morning, the serum was decanted into one or more sterile test tubes. The serum of each patient was kept separate. A Wassermann test was made of each patient's serum. Serums of different patients, reacting negatively, were then mixed for treatment. Record was kept of the time after the date of the rash when patients were bled. The serum was kept in the ice-box for a week at most, without addition of a preservative. If it was kept longer, a 0.25 per cent. solution of tricresol was added.

The serum was given intramuscularly, into the thigh, usually a single dose within a few days of exposure. No reactions, either local or general, were noted. Dosage was from 7 to 25 c.c., usually a single dose.

GROUP 1.—*Use of Serum on Nonimmunes Exposed to Measles.*—The first group of patients, four in number, were in a convalescent diphtheria ward with sixteen beds. These patients mingle freely. They were the only children who had not had measles, and the parents of each were interviewed carefully to obtain the history. They were exposed to two patients who came to the hospital during the incubation period. The first, Norma I., aged 6 years, had been in this ward five days when the rash began on May 5. Helen F., aged 8 years, had been in this ward three days when the rash appeared on May 9. They were both moved out of the ward at the appearance of the rash, yet they were there during the most highly infectious period.

Shirarina C., aged 16 months, and Alfred D., aged 2 years, were each given 15 c.c. of convalescent serum on May 11. The serum used was from five patients taken nine, nineteen, eight, twenty-five and seven days, respectively, after the rash of measles. Neither of these patients developed measles, and they were observed throughout the period of incubation, as were all of the exposed patients.

Lillian W., aged 13 months, was given on May 1, 6 c.c. of convalescent serum, taken from three patients, which had been collected ten, nine and twenty days, respectively, after the rash. This patient showed no signs of measles.

The fourth child, Gaetano F., aged 18 months, of this exposed group of nonimmunes, was used as a control and was given no convalescent serum. May 24, she developed a typical measles eruption.

GROUP 2.—May 13, a patient with laryngeal diphtheria was admitted to the laryngeal room with three or four other patients. All patients were treated in the same unit, no precautions being taken by physician or nurse. Being very ill, they were given much nursing by a special nurse, night and day. May 15, it was learned from the mother of the patient with laryngeal diphtheria that there were six cases of measles in her house. The child was at once examined, and many Koplik spots being found, the child was removed to another ward.

In this room were two children who had never had measles. Raymond B., aged 1 year, was given, May 18, 15 c.c. of serum obtained from five patients taken nine, four, four, fourteen and six days, respectively, after the measles eruption. The patient did not develop measles.

Alfred A., aged 4 years, was given 15 c.c. of convalescent serum, May 16, obtained from two patients eight and ten days, respectively, after the rash. This patient did not develop measles.

GROUP 3.—June 2, Veronica L., aged 3 years, developed a measles rash in the laryngeal room. She was removed at this time.

In this room, in the same unit, was Willard D., aged 7 months, who had never had measles. He was three days with the preceding patient. He was given 15 c.c. of convalescent serum, June 2, taken from a mixed serum from eight patients five, six, eleven, nine, eight, seven, ten and nine days, respectively, after the rash. He did not develop measles.

Patients Exposed to Infection Through Nurse.—June 13, Mary McD., a nurse, developed a rash while working in the scarlet fever ward. She had been working in the same ward for one week. There were three patients in this ward who had never had measles:

John W., aged 2 years, and Jeanette J., aged 3 years, were given 10 c.c. of serum, June 16, and Baby Moran 5 c.c. of a mixed serum from five patients taken thirty-one, nine, forty, six and five days, respectively, after the measles eruption. These three were observed throughout the incubation period, but did not develop measles. It must be taken into consideration, however, that the nurse during her duties washed her hands frequently, and may not have infected them.

Cases Occurring in Ward D.—A large room for from ten to twelve patients in this ward is so arranged that aseptic precautions can be taken, if necessary, each patient being isolated. The beds are about 10 feet apart, on centers, with no kind of partition between. We have not been entirely successful in preventing the

spread of measles in such a room. It does control measles to a large extent, however. This explanation is made to make clear what is meant by partial exposure.

Shirarina C., aged 16 months (referred to above in Group 1), had been given convalescent serum, May 11. May 25, while in another unit, she was partially exposed to a child with a measles rash for about ten hours. Again, June 16, she was partially exposed in the same ward to a second child, who developed a rash, June 16. Shirarina C. did not develop measles, although she had received only the one dose of convalescent serum, May 11.

Howard D., aged 18 months, was partially exposed to a child who developed a measles rash in the same room, May 24, but not in the same unit. This exposure was over a period of several hours. Howard D. was given 10 c.c. of convalescent serum, May 27, taken from five patients nine, four, four, fourteen and six days, respectively, after the rash. Howard D. did not develop measles. Again, June 16, Howard D. was partially exposed to a second patient in the same room, but a different unit. Howard D. was not given any more serum and did not develop measles.

In the same room, in Ward D, June 16, Ralph L., aged 7 years, developed a measles rash. In this room, but in a separate unit, were three children who had not had measles.

Regina C., aged 1 year, and Camella B., aged 2 years, were also patients. The first was given 7 c.c. and the second 10 c.c. of mixed serum, June 16, taken from four patients seven, seven, nine and forty days, respectively, after the onset of the rash. Dorothy G., aged 7 years, on the same day was given 10 c.c. of serum, taken from five patients thirty-one, nine, forty, five and five days, respectively, after the onset of the rash. These three children did not develop measles.

ACTIVE IMMUNIZATION

Three patients were treated as follows:

EXPERIMENT 1.—Esther V., aged 4 years, was partially exposed to a child who, May 24, developed a measles rash in the same room, but in a separate unit for several hours. May 27, she was given 15 c.c. of convalescent serum, taken from three patients five, eight and ten days, respectively, after the rash. On the same day (May 27), direct swabs from the nose and throat of two children, who developed the rash on the same day (May 27), were taken. They were put back into the test tube, and were taken directly to the ward where Esther V. was then a patient. The nose and throat of Esther V. were thoroughly swabbed with this fresh secretion. The time between taking the secretions and the swabbing of the second patient was not over three or four minutes. Esther V. had pertussis and usually had a temperature of about 100. Twelve days later, a discrete hemorrhagic eruption appeared on her face, with a few scattered patches on her body. They were raised to the touch. They were most numerous on her face. On the same evening, the temperature rose to 103. Next day, subsequently, it remained as usual. The rash did not extend, and faded away in a few days. There were no Koplik spots or catarrhal symptoms, and the child sat up in bed as usual, not seeming to be at all ill.

This experiment seems to show that, if she was really infected, either naturally or artificially, and we have reason to believe she was, this patient did, twelve days after inoculation, show a reaction which may have been an abortive measles. If it was an abortive measles, even though the serum did not entirely prevent it, it showed inhibitive power. The reaction might have been due to the serum, but it was not like any I have ever seen.

The attack would never have been thought of as measles unless we had known of the inoculation.

EXPERIMENT 2.—August 11, Regina C., aged 1 year, and Morris S., aged 4 years, neither of whom had ever had measles, were infected with nasal and throat swabbings taken from a child whose rash began on the day before. Swabs were used on the donor, one of the nose and nasopharynx, and one of the throat. There was only an interval of two or three minutes before the inoculation was done. Both swabs were used in swabbing the nose and throat of the two children, Regina C. and Morris S.

August 12, each child was given 25 c.c. of a mixed convalescent serum, and this was repeated, August 14. The mixed serum was about 2 months old and was taken from eight patients five, six, eleven, nine, eight, seven, ten and nine days, respectively, after the rash. There was no reaction from the serum, and neither child showed any signs of measles in the hospital.

CONCLUSIONS

Six children were definitely exposed to measles and were apparently protected from the disease by immune serum; one, used as a control, developed measles. Eight others were partially exposed and did not develop the disease after immunization. Three other patients received virus inoculation and immune serum simultaneously. In two there was no reaction. In the third there was a slight reaction indicated by a transient rise in temperature and an atypical rash.

The experiments are too few to be conclusive, but they are sufficiently suggestive to warrant further investigation.

THE RELATION OF THE LYMPHOCYTE TO CANCER

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While the morphology of the various formed elements of the blood is now on a fairly scientific basis, there remains considerable lack of knowledge in regard to the origin and function of these cells. It is a matter of common agreement that the red cells are formed in the bone-marrow in adults and in the liver and spleen in embryos, while the origin of platelets is still in doubt. The polymorphonuclear leukocytes come originally from bone-marrow; the lymphocytes are derived from lymph glands and from tissue, and the large mononuclears have either the same origin as lymphocytes, or develop from endothelial cells lining blood or lymph vessels.

Not all the functions of these cells have been elucidated, although the evidence indicates that the red cells are concerned chiefly in tissue respiration, or the carriage of oxygen to the tissues; while the blood platelets are apparently involved in the phenomena of blood clotting. The white cells as a class are regarded as protectors of the body tissues against injurious agents of all kinds, and are intimately associated with the processes of inflammation. Polymorphonuclear leukocytes and large mononuclears are more involved in the defense of the body through an actual attack against the injurious agents, resulting in the engulfing (phagocytosis), neutralization and absorption of such agents. My opinion is that the small mononuclears, or lymphocytes, which are made up chiefly of nuclear material, have as their chief physiologic function the carriage in the form of nuclear enzymes of energy that is required by normal living body cells in the processes of growth and multiplication. Under abnormal conditions, and in concentrated numbers, these lymphocytes may give additional aid and energy to the normal body cells surrounding areas of injury and inflammation,

thus causing a local speeding up of proliferation and repair.

In the growing embryo, the red cells apparently are the first to appear in the blood, which might be expected if cell and tissue respiration or oxidation is the prime factor in life. Of the white cells, the first to appear in the blood of the young embryo (usually about the tenth week of life) is a cell corresponding to the lymphocyte. Here again it is only logical that the cell which possibly has to do so much with growth energy should appear before the polymorphonuclear cell which has to do with the protection of that growth and life against injury.

During the entire fetal life, which involves characteristically rapid growth and multiplication of body cells and tissues, the lymphocytes remain the most numerous of the white cells; indeed, a relative increase or lymphocytosis persists during early childhood, the period of continuously rapid growth. At the time when body growth has reached its maximum, a definite change is found in the relative number of white cells in the blood, the number of lymphocytes being very much less than that of the polymorphonuclears, while at the same time the special auxiliary lymphoid tissues (such as the thymus) which have to do with growth rapidly atrophy.

It appears, therefore, that the lymphocyte possibly may be described as the male cell of the blood, and that through a process which is as yet not thoroughly understood, it has the power by means of the enzymes of its mass of nuclear material to energize the body cells with which it comes in contact, causing them to grow and divide. It is probable that the lymphocyte, or its energy substance, is under the constant control of an antibody, and that under normal conditions the influence of the lymphocyte and its enzymes is regulated for the exact demands of the body cells and tissues in their regular growth and division, or to meet the special requirements of increased local repair at points of injury.

It is my belief that as the controlled lymphocyte may be the potential father of normal body cells, so the uncontrolled lymphocyte may be the potential father of the tumor cell. The potential mothers of tumor cells are the epithelial cell, the connective tissue cell, the muscle cell or other tissue cells. The offspring of such unions may be the tumor cells themselves—the cancer cell, the sarcoma cell, the myoma cell.

The primary basis of cancer probably is a cell or tissue injury due to various physical, chemical, parasitical, mechanical or metabolic agents. The actions of such agents may be just as certain, even though they are not seen and appreciated. Because there is no history of cell or tissue injury is no reason to doubt this important precancerous factor.

Local injury is followed by local inflammation, and the latter involves the concentration of defensive polymorphonuclears and large mononuclears which attack the agents of injury, and also involves the concentration of the offensive lymphocytes with their energy-bearing enzymes, which may stimulate the surrounding tissue cells to more rapid proliferation and repair. It is significant that the lymphocytes are usually more concentrated at the periphery of a lesion. They are apparently more in contact with and more concerned in the repair work of surrounding tissue cells than in the attack on injurious agents; that is, they are seldom, if ever, phagocytic. These fundamental principles of my theory in regard to malignancy have been outlined in previous articles on the subject.[1]

In the warfare between injurious agents (especially bacteria) and body cells, the polymorphonuclear leukocytes making up the standing army rush to the defense of the body at the point of attack, and by an offensive campaign either destroy the invaders or are themselves destroyed. The endothelial leukocytes constitute the ambulance corps and bear away dead or injured bacteria, polymorphonuclears or other blood cells. The lymphocytes, on the other hand, make up the army of reconstruction. If the repair is of a normal nature, well controlled by antibodies, the result is normal healing. If the repair is of an abnormal nature due to the lack of controlling forces or antibodies, the result is lawless repair or cancer.

Thus cancer may be due to two factors, one local, the other general—a local cell stimulus which is set up by the energy-bearing lymphocytes concentrated by any form of local injury (usually chronic); and a general loss of lymphocytic control due to an acquired or possibly hereditary lack of antibodies in the tissues or circulation. Hence, cancer may be the result of an autoparasitism, in which local accumulations of uncontrolled lymphocytes are the important factors. The prevention and cure of cancer possibly may be brought about by the active or passive increase of the controlling lymphocytic antibodies.

That there is evidence from the work of various investigators to strengthen this hypothesis is indicated by a study of the literature on the subject.

Virchow[2] was probably the first to suggest an analogy between the fertilization of the ovum and the development of the cancer cell. Klebs[3] called attention to the common association of leukocytes and cancer cells, and believed that the former might fertilize epithelial cells and cause the latter to develop into cancer. In a study of resistance against transplanted mouse cancer, Bashford[4] found that the injection of normal mouse blood corpuscles induced a definite resistance against transplanted cancer. It is possible that corpuscular antienzymes were thus stimulated, with the result that the cancer cells could not find proper energy soil for their development.

Lewin,[5] in like manner, produced resistance against both rat carcinoma and rat sarcoma by the injection of normal rat blood; while Weidanz[6] obtained somewhat similar results with normal blood inoculations. Apolant[7] reported induced resistance by the injection of normal blood even from alien species. DaFano[8] associated the lymphocyte with the distribution, or stimulation, of immunity against transplanted cancer. Bashford, Murray and Cramer[9] showed that active resistance in mice against transplanted cancer might be developed as soon as four days after the inoculation of normal mouse blood, but that the resistance was greater after ten days—evidence of the stimulation of antibodies. Bashford, Murray and Haaland[10] demonstrated that as high a degree of immunity could be

1. Bristol, L. D.: Med. Rec. **83**: 787 (May 3) 1913; J. M. Res. **32**: 475 (July) 1915; Med. Rec. **89**: 180 (Jan. 29) 1916; Science **54**: 58 (July 14) 1916; J. Maine Med. Assn. **9**: 57 (Oct.) 1918.
2. Virchow: Die krankhaften Geschwulste, Berlin, **1**: 87, 1863.
3. Klebs: Die allgemeine Pathologie, Jena, **2**: 524, 1889.
4. Bashford: Brit. M. J. **2**: 209, 1906.
5. Lewin: Berl. klin. Wchnschr. **44**: 1606, 1907.
6. Weidanz: Arb. a. d. k. Gsndhtsamte. **30**: 443, 1909.
7. Apolant: Ztschr. f. allg. Physiol. **9**: 91, 1909.
8. DaFano: Ztschr. f. Immunol. Orig. **5**: 68, 1910.
9. Bashford, Murray and Cramer: Proc. Roy. Soc., Series B **79**: 180, 1907.
10. Bashford, Murray and Haaland: Third Sc. Rep., Imp. Cancer Res. Fund, London, pp. 395, 369, 1908.

established by inoculation of normal blood as by injection of blood from tumor-resistant mice.

Collection and concentration of lymphocytes are very commonly found around growing spontaneous tumors and around living tumor grafts. DaFano[11] believes that in the latter the lymphocytes are concerned with the development of resistance against such grafts. Murphy and his co-workers[12] have shown that mice in which lymph glands and lymphoid organs have been unfavorably affected by roentgen-ray treatment are especially susceptible to the growth of transplanted tumors, and they believe that the lymphocyte is a potent factor in establishing the immunity of mice to transplanted cancer. More recently Murphy and Sturm[13] have demonstrated that after stimulation of lymphoid elements by heat, tumor grafts are much less successful. Corson-White,[14] in a study of the blood of tumor rats, following cancer-stimulating and cancer-inhibiting diets, found no change in the counts of red cells and no change in the numerical counts of white cells, except in the case of lymphocytes, and here definite changes in their numbers were noted.

One of the most striking and characteristic, as well as fatal, features of cancer is the spread of metastases, usually through lymph spaces and glands, less frequently through the blood stream. Instead of encountering resistance in lymph glands, cancer cells apparently find in lymph cells and tissues a lack of resistance or a definite nutritive soil and extra supply of energy for their continued growth and uncontrolled multiplication.

May we not say of metastatic cancer cells in lymph glands what Herbert Spencer[15] said of plants and animals in general? "The multiplication of any kind of plant or animal in localities that are favorable to it, is a growth where the antagonistic forces are less than elsewhere." What an important step it would be in the solution of the cancer problem if it were possible to control the spread of metastases by causing lymph glands to be actually antagonistic to cancer cells!

It is a significant fact that roentgen rays have an apparently specific effect on cancer cells, spermatozoa, ova and lymphocytes. Their effect on blood corpuscles other than lymphocytes is not marked. Does this not indicate a similarity in the basic substances or energy of such cells?

Based on this theory of the relation of localized uncontrolled lymphocytes and their nuclear enzymes to the energizing of epithelial cells leading to lawless reproduction, or cancer, experiments are being carried on in our laboratory to determine a possible means of controlling lymphocytes and cancer. These experiments will be described in a subsequent communication.

11. DaFano: Ztschr. f. Immunol. Orig. **5**: 1, 1910.
12. Murphy, J. B., and Taylor, H. D.: J. Exper. M. **28**: 1 (July 1) 1918.
13. Murphy, J. B., and Sturm, Ernest: J. Exper. M. **29**: 25 (Jan. 1) 1919.
14. Corson-White: Proc. Med. Soc. of Penn., 1918.
15. Spencer: First Principles, New York, D. Appleton & Co., 1896, p. 234.

Racial Factors in Tuberculosis.—The findings in the Framingham demonstration as to racial factors bear out previous experience elsewhere, namely, that the Italian race stock presents a low tuberculosis incidence, in contrast to high rates in French-Canadians, Irish and other race stocks. On the other hand, the von Pirquet skin reaction among children shows a high percentage of infection among Italian children, with a correspondingly low incidence of active disease.—*Bulletin*, National Tuberculosis Association.

THE NEEDS OF MEDICAL EDUCATION AS REVEALED BY THE WAR*

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It is regretted that accurate statistical data to support statements made herein are not yet available, but lack of time as yet has made impossible the analysis of the vast amount of data in the records of the Surgeon-General's Office pertaining to this subject. But the Surgeon-General's great interest in this matter will doubtless result in a critical study of the data and a presentation of the results at no distant date. I do not comment further with respect to the probable results of this future statistical study other than to venture the conviction that they will prove disconcerting to any who may have entertained the idea that general standards of medical education in this country have reached a satisfactory degree of excellence.

You are accordingly asked to consider the following remarks as merely suggestive, as preliminary to the exact information later to be available, and as only embodying general impressions that I gained of medical officers under instruction at medical officers' training camps while I was in general charge of Medical Department training from May, 1917, to May, 1918. During this period I made frequent visits to the several camps located at Fort Benjamin Harrison, Ind.; Fort Riley, Kan.; Fort Oglethorpe, Ga., and Allentown, Pa. The camp at Fort Des Moines, Iowa, was also an instruction center and was duly visited, but was for colored medical officers only.

While accurate figures are lacking, it is doubtless true that more than half the medical officers who entered the service passed through the above named camps. The impressions gained were largely derived, of course, from the commandants of these camps and other officers pertaining to their respective staffs of instructors. They were accordingly second hand to a very considerable extent, but had the advantage of representing the composite ideas of large numbers of instructors.

For the period from May to October, 1918, I was in command of Camp Greenleaf, Fort Oglethorpe, Ga., and consequently was in close contact with the medical officers sent for instruction there. Camp Greenleaf at that time was handling over four fifths of medical officers sent to camps for training, as the camps at Fort Benjamin Harrison and Fort Des Moines had been discontinued, and those at Fort Riley and Allentown greatly cut down. Camp Greenleaf had then some 2,500 officers under instruction at one time, of which over 2,000 were medical officers and the remainder were student officers of the Dental, Veterinary and Sanitary Corps. With the concentration of training, these officers came to Camp Greenleaf from every part of the United States, so that they represented a fair cross section of the medical profession of the country, as it was accepted for service in the Medical Corps of the army.

In this connection, I would say that the opinions of Col. W. N. Bispham, Medical Corps, who will doubtless discuss this paper, should be of equal or greater

* Read before the Fifteenth Annual Conference of the Council on Medical Education of the American Medical Association, Chicago, March 3, 1919.

value than any here expressed, for as commandant of the medical camp at Fort Riley, and later as commandant of Camp Greenleaf, he was in close relation with the student medical officers throughout the war, and had exceptional opportunities for personal observation from the standpoint of an experienced educator.

Most of the officers entering the army for the emergency volunteered for service from patriotic purposes. Probably few came in at the outset because of the draft. Later, with the raising of the age limit under the draft, a somewhat larger number probably were impelled to offer services which might later be requisitioned. Some actually appeared as drafted men; a few unwilling, others physically or otherwise rejected as officers, yet held to service by draft boards, and some who were graduates of low standard schools who had not been invited by the Surgeon-General to appear for examination for commissions. Practically all of these physicians who entered the service at medical training camps as privates were, it is believed, sooner or later examined as to their fitness to be officers. Some who had been previously rejected physically had their less serious defects waived and were given special duties which they could perform when the need for medical officers became more acute.

PERSONNEL OF ORIGINAL MEDICAL RESERVE CORPS

At the outset of the war, the list of civilian physicians already enrolled for such service as might be required amounted to some 1,600, and composed the Medical Reserve Corps of the United States Army. It was the first—and a most valuable—dependence of the Medical Department. Most of its members were promptly called to the colors, when they saved a most difficult situation in respect to meeting the early needs for the organization of the rapidly expanding medical service and the recruitment and care of the new troops.

This original Medical Reserve Corps was organized long before the European war, and at a time when the services of its members seemed little likely ever to be needed except to supplement to a small extent the regular Medical Corps on a peace time basis. It was merely a precaution and insurance of the Medical Service of the army and medical profession of the country against what was considered an improbable emergency. History shows how wise was this precaution, the inception of which was largely due to the forethought and energy of Gen. J. R. Kean of the Medical Corps.

But the nature of the conditions and ideas under which the old Medical Reserve Corps was organized had their influence on its medical standards and the medical examinations required for its enrolment.

In general, it might be said that it was composed of three classes:

(*a*) There were the recognized leaders of the medical profession, who lent the weight of their well known names and great professional reputations to popularize the then new Reserve Corps.

The abilities of these men were well known, and the examinations to which they were subjected were probably cursory.

(*b*) A somewhat smaller class probably consisted of a personnel drawn from the average class of practitioner, such as constitutes the backbone of the medical profession of the country.

Here also the examinations which they were required to pass were none too rigid; but by reason of the accepted candidates' being qualified in fact, no professional difficulty later occurred as a result of any professional inefficiency on their part.

(*c*) There was also a not inconsiderable third class, composed of less well qualified men, some of whom enrolled for patriotic purposes and others perhaps by reason of the desire to possess a commission signed by the President of the United States as a credential of professional ability additional to their diploma and license to practice.

These men likewise, in many instances, received an examination of less searching character. Possibly, too, some examiners were inclined to leniency as to standards, feeling that the offer of services of these men should be recognized by their acceptance unless grossly inefficient, and being comforted by the idea that there was little likelihood of their services being ever called on. Unquestionably, a number of the latter class of men should never have been recommended to the Surgeon-General for commission. As soon as they were called into service, questions as to their competency developed. If I recall correctly, the chief surgeon of the Western Department reported that he had, in his department, a large number of this class, representing largely a wandering type of physician who had temporary employment on ships, in the salmon fisheries, in mines, on plantations in Mexico and in South America, etc.

These substandard men were later reexamined, as their deficiencies became apparent, and doubtless all of them were ultimately eliminated from the service.

The number of these professional undesirables is not known to me, but my impression is that they probably composed some 15 per cent. or more of the old Medical Reserve Corps.

STANDARDS OF EXAMINATIONS

At the outset of the war, there is no question also but that some of the local examiners of applicants for appointment in the Reserve Corps did not maintain adequate standards for either physical or professional efficiency. Poor men were not rarely recommended for appointment. I assisted in the examination of a large number of papers of applicants, and helped to reject not a few who were obviously unfit. I have a vivid recollection, for example, of a candidate who was recommended by one examiner despite the fact that his papers showed that he was 68 years of age, was grossly obese, and further, had lost one leg below the knee.

The thought tended to occur, in such instances, as to whether the examiner was as much interested in securing competent medical service for the army as in helping diminish local professional competition.

Fortunately the number of such unduly lenient examiners was not great, and as soon as they were discovered they were promptly relieved from examination work. The men that they passed, however, added to the problem of elimination that had to be solved later.

It should be said here that most of the examiners were thoroughly conscientious, and the men whom they recommended were found to be qualified. Some examiners perhaps were even overstrict, as there were cases of men who were rejected and who were later drafted, and on being reexamined were found qualified.

As the war went on, the local examiners became better versed with the army requirements, and fewer mistakes were made. On the whole, the system of

local examiners might be considered as efficient if duly checked up later. The number of undesirables, such as the professionally incompetent, physically incapacitated, men of bad character, alcoholics, drug addicts and others who were kept out of the service in this way, was very great. The experience of the Spanish War, when men were accepted for the Medical Service with little, if any, examination as to their fitness, was not repeated to any great extent. All this saved a vast amount of medical inefficiency and justifiable cause for criticism of the professional care of the disabled and greatly reduced the labors of later examining boards necessary to relieve the service of inefficients.

SELECTION OF MEN WHO REACHED THE MEDICAL TRAINING CAMPS

It must be emphasized that the medical officers who finally reached the medical training camps represented much better than the average of the medical profession of the country, for these candidates had been subjected to several processes of elimination:

(*a*) They had to be invited to appear for examination by the Surgeon-General, and unless they appeared to be probably desirable, this invitation might not be forthcoming.

(*b*) They had to be graduates of reputable medical colleges, which ordinarily eliminated men coming from institutions of poor character.

(*c*) They had to be licensed to practice in the state in which they lived, which would exclude medical graduates who had been found later to be not thoroughly qualified.

(*d*) They had to be in the active practice of their profession, thereby excluding the failures in medical practice who were making their living by some other vocation.

(*e*) They had to pass an examination before a local board, which had to be satisfied with their professional, physical and moral qualifications. Here occurred the greatest number of rejections, for the local board was in position not only to test out qualifications by examination, but in many instances it knew the candidate personally or by reputation, and was well informed as to his antecedent activities and conduct.

(*f*) Further, before being commissioned, the American Medical Association investigated and reported on their cases, to make sure that there was nothing in their career which should render undesirable their appointment as medical officers.

(*g*) Finally, the Surgeon-General had the right of rejection, which was exercised in the case of men who ultimately appeared from their papers to be not qualified for the service.

It is apparent, therefore, that a large proportion of the undesirables of the medical profession were excluded from service and never reached a medical training camp. The latter, therefore, dealt with an already selected class. That this selected class presented still further professional deficiencies invites reflection on the part of all those in charge of medical education.

ELIMINATION OF THE UNFIT

In spite of all the foregoing factors of preliminary elimination, not a few medical officers reported at medical training camps who were found by the examining boards there not fit for service. The number of those who were disqualified for professional reasons is not known. Further, figures on this point which may be later available will tend to underestimate professional inefficiency, for when men seemed professionally disqualified the tendency was to discharge them for physical disability if reason for such could be found to exist. This saved the reputation for professional competence of the rejected candidate after he returned to his home. This charitable method of disposal could be carried out more commonly than one might think, as many of the poorly qualified men were graduates of the poor schools of the past generation, were elderly, of sedentary habits, and often obese or with some pathologic condition or organic defect more common in the elderly.

This practice of rejecting the undesirables for physical rather than professional reasons, if the former was possible, was probably also common among local examining boards undesirous of provoking personal antagonisms and local criticism. For a physician to be found physically unfit for service carried no stigma—professional rejection did. Between the two horns of the dilemma, the choice tended to be along the easiest way for all concerned. But in any consideration of professional education and efficiency, these facts should not be overlooked.

As soon as the medical training camps had begun to function, it became apparent that one of their important fields of usefulness would be to act as filters to determine and eliminate the unfit. The commandants of the several camps accordingly appointed examining boards to examine all student officers, and on their recommendations reported for discharge all whom these boards found disqualified for service in any capacity.

These boards for some time were not fully accepted by the specialists' divisions of the Surgeon-General's Office, which had card indexed the men whose reputations seemed to warrant their acceptance as specialists. However, so many of these men were found, on examination, to be overrated by their reputations, that the specialists' divisions finally agreed to make their appointments as specialists tentative and subject to the examination held by their representatives on the general examining boards at training camps. The number of men claiming a specialty and not found qualified is given later. The number was considerable. It is interesting to note that a few alleged specialists were even found by the camp examining board unfit to practice any branch of medicine in the service. The others not qualifying were recommended for release from specialty and made available for general assignment. One deduction is that the general reputation of a man is not necessarily a criterion of his actual qualifications. Another, that in their estimates of each other gained by ordinary contact, physicians are not infallible. Another, that a large number of men actually practicing as specialists in this country, and generally accepted as such, are not duly qualified as the experts they are supposed to be. The latter point is one of special interest and concern to those interested in postgraduate and specialist education in this country.

In May, 1917, department surgeons were provided with a systematized course of instruction, necessarily largely a matter of personal reading, which was to be carried out by medical officers at the military posts and relatively small stations under their jurisdiction. Commanding officers were made responsible for the effective carrying out of this course to the extent

practicable under local conditions. The Inspector-Generals were also charged with seeing that this work was carried out.

Toward the end of 1917, it became probable that a campaign of public criticism against the professional competence of medical officers was about to be prosecuted. It is believed that this was one phase of systematic German propaganda. To forestall this, medical "training officers" were put in every division and large medical organizations, whose business it was to determine defects, outline remedial instruction, and see that that qualification was insured by certification by a local board of examiners.

During the eight months of 1917, there were issued five orders or circulars to promote the instruction of medical officers and secure the elimination of those who could not be qualified. These were evoked by the fact that the qualifications of medical officers actually commissioned for service were not, as a whole, satisfactory. The intent of the foregoing orders was to reach out, determine the proficiency of all medical officers except those overseas, and either rectify their faults or cause their elimination from the service. Those eliminated were discharged for professional, physical or moral deficiencies; they were not discharged for ignorance of military methods and affairs, for it was realized that all were necessarily learners in such respects.

In connection with the examination of medical officers at the medical training camps, the need for medical officers, which always exceeded the supply, had to be borne in mind. It was realized that the Medical Department had a multiplicity of functions to be performed, some of which required the possession of a certain medical knowledge without necessarily a high degree of efficiency. There were, for example, many executive positions in hospitals and other formations to fill, recruits were to be examined, sanitation to be maintained, and enlisted men to be instructed and controlled.

EMPLOYMENT OF PARTIALLY QUALIFIED MEN

Instead of the uniform rejection from the service of all who were not fully qualified for the general practice of the medical profession, it was accordingly early recognized that there were "misfits" as well as "unfits." Partially qualified medical men were not without value. Experience proved that it was possible to economize in personnel without detriment to the efficiency of the medical service by placing the less well qualified men in positions of restricted professional activity where they could be of as much use as the better qualified men, who might thereby be released for higher professional duties. These men of less professional competence were assigned to special duties for which high professional competence was not essential. Frequently this was an advantage. The country doctors who had retrograded professionally might have an excellent ability to handle men and transport, and accordingly might be safely assigned as junior officers in ambulance companies. Some were good executives and made successes as adjutants. Others could safely be trusted with certain work in the examination of troops. Some could be trained in sanitary inspection, and took to this work with avidity and efficiency. All this is mentioned to emphasize the fact that even by boards in training camps, medical officers not fully qualified professionally were often not rejected but advantageously held to certain medicomilitary duties, although their examinations showed that in purely professional matters they were not properly qualified to practice.

Any later figures for discharge from the service for professional inefficiency must therefore be recognized as by no means including all the professionally inefficient, many of whom were held to duties which were executive or only semimedical in character, or in which only an elementary or highly restricted medical service was required. It can never be known how many of these substandard men were held in the service in this manner. I would hazard a guess that perhaps 10 per cent. of these who came to training camps fell within this class. In any consideration of the efficiency of methods of medical education in this country, they could not be disregarded; for if the Medical Department had no other duties to perform than the professional care of the sick, this class of officers would have had to be rejected.

The same principle was applied about the end of 1917 to the medical personnel with troops and hospitals. Orders directed the transfer to divisions of medical officers in hospitals who seemed not adapted to the latter work; conversely, as certain professionally well qualified men seemed physically or temperamentally unsuited to service with troops, division surgeons were ordered to transfer such to hospitals. No officer was to be discharged unless he was found unsuited for the performance of any duty under the Medical Department in both these classes of service. The results in numbers so discharged are not known. It is believed that the number of unfit so eliminated was not inconsiderable.

RECLAMATION WORK

The medical examining boards at camps were further confronted with a class which was at once not qualified to be professionally passed, yet presented possible susceptibility to improvement and was too good to be discarded summarily. Accordingly, "salvage classes" were started, the members of which were systematically and intensively quizzed by expert quizmasters. This reclamation work had to be carried on in conjunction with more or less of the camp general curriculum, and called for interest and effort by all concerned. The men assigned to join these salvage classes were those who seemed bright and energetic enough, but who, for one reason or another, had not kept up with medical progress along certain lines. The subjects in which they were quizzed were only those in which they were found deficient. The great majority welcomed the opportunity thus to refresh themselves. The reclamation course usually covered about three weeks, when the candidates were reexamined. Nearly all qualified at the later examinations. The number varied. At some times, the reclamation classes at Camp Greenleaf amounted to as much as 6 or 8 per cent. of the student officers' group.

This experience would seem to carry a moral for medical educators. Have they not a field of usefulness in civil life whereby men who were originally qualified but who later deteriorated could have their deficiencies brought home to them and then effectively removed?

Much the same conditions in hospitals were met by orders early in November, 1917, by which it was contemplated that chiefs of service should seek out and see to the remedy as far as possible of the professional deficiencies of their subordinates.

QUALIFICATIONS OF CANDIDATES

The figures in Tables 1 and 2 are taken from reports by the board of examiners in session at Camp Greenleaf from Aug. 6, 1918, to Dec. 17, 1918, after which date no more candidates appeared. They show the relative classification by the board of accepted candidates. The examinations were searching, but thoroughly fair and practical. An expert in his line examined in each subject. The examination was practically standardized. Probably the qualifications of a large number of American practicing physicians and surgeons of the better class had never before been so thoroughly ascertained and fairly analyzed.

It is obvious that the board found the proportion of really high grade men in internal medicine to be small.

These figures include a few men qualifying for limited surgical work only, as abdominal surgery or orthopedic surgery.

They also indicate that only one medical officer in three was qualified to do independent surgery, and that only about 6 per cent. were really high class surgeons.

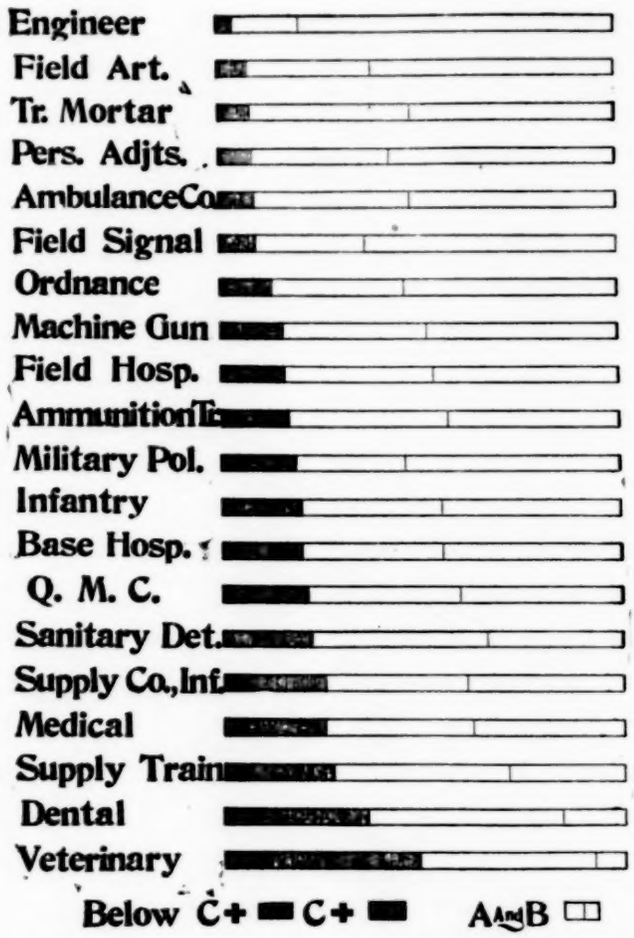
These examination findings seem to show that even with the quite carefully selected medical men entering the service, representing a type much better than the average of the profession, their qualifications, from the standpoint of both education and practice, cannot be considered satisfactory.

RELATION OF QUALIFICATIONS TO STANDARDS OF MEDICAL SCHOOLS

In a general way, it may be said that the general professional qualifications of officers bore a close relation to the educational standards of the schools from which they graduated. This was what would be expected. But various instances were noted in which graduates of good schools made a poor professional showing. Possibly an explanation might be that such men, while students under stimulation by the faculty, might do passable work, but that on graduation their natural inertia asserted itself, and not even professional competition furnished a sufficient incentive to them to keep abreast of medical progress.

The men from the poor schools naturally showed themselves less well qualified. Their professional foundation was poor, and the majority were permanently handicapped by it. On the other hand, their defects were perhaps not wholly the fault of the schools, for an able, ambitious man might, by his own initiative and later study, rise above his school environment. But the men from the poor schools were perhaps generally of a poorer type and not as alert mentally. The poorer schools very likely got men who were unable to succeed at better schools and were dropped therefrom. Some of these men were relatively sluggish mentally, and never had been provided by the Creator with the mental qualities necessary to the proper pursuit of medical science.

The thought is inevitable that medical schools should require a satisfactory psychologic rating for candidates for admission to a course leading to the degree of Doctor of Medicine, to make sure that they have the mental aptitude to qualify properly for it.



Proportion of high and low grades in various officer groups: The proportion of A grades varies from 8 to 79 per cent.; the proportion of A and B grades combined, from 52 to 96 per cent., and the proportion below B, from 4 to 48 per cent. Note the remarkably high ratings of engineer officers.

PSYCHOLOGIC TESTS

The psychologic tests of officers and men at Camp Lee, as shown on the accompanying chart, should be a shock to the complacency in this respect of our profession, for of all the different groups of officers at that camp, engineers, infantry, artillery, medical, etc., the group of physicians ranked lower in mental alertness than any other group of the military class, except the supply train, dentists and veterinarians. These scientific findings were abundantly borne out by experience, and if memory serves correctly, the chief surgeon at that camp recommended some 40 per cent. of his medical men for discharge as not qualified for service. This group of medical officers at Camp Lee was further investigated in a general way as to their antecedents, and was found to have largely come from poor schools and small communities and to have represented an exceptionally poor class of the general run of medical officers.

The question presents itself as to whether the medical schools are doing all that they should to keep out of the medical profession a class of men whose mental capacity is such that they can probably never rise to its opportunities and requirements. I believe that modern psychologic tests might be used with advantage to that end in respect to entrance examinations for medical schools.

QUALIFICATIONS OF ALLEGED SPECIALISTS

A very large proportion of alleged specialists were found in examination to be, in fact, only partly qualified. However, they had a basis of special knowledge

of greater or less extent, and to render them properly qualified, special schools were organized to which approved candidates were sent by the examining board. These schools were staffed with the ablest professional specialists in the country, and there was a school for each specialty required in the army. Their courses were highly practical and intensive, and the student officers appreciated their great value. They met an obvious need. The thought presents itself as to whether the specialists' courses of instruction in the civil institutions in their country are doing the best

TABLE 1.—CLASSIFICATION OF ACCEPTED CANDIDATES IN MEDICINE

Classification	Number	Per Cent. of Total
Qualified, plus	16	0.643
Qualified, good	216	8.176
Qualified	1,658	62.717
Qualified, junior	418	15.821
Qualified, junior, minus	334	12.641
Total	2,642	

that they might do along these lines. The thought also presents itself as to whether standards for specialists should not be higher, and whether some special recognition for excellence, such as the Doctor of Public Health degree given for demonstrated excellence in sanitary science, is not worthy of extension to other specialties. For a man to claim the qualities of an expert, even if his claims are accepted by the general public, does not make him an expert, and one of the chief functions of medical education is to safeguard the community.

Besides the general examining board at Camp Greenleaf, there was, as just intimated, a special board of professional experts which examined every officer reported by the Surgeon-General's Office as presumably qualified for a specialty. They also examined men claiming special competency in any subject, or referred to them by the general examining board as presenting qualifications worthy of further testing.

The results of the examinations of alleged specialists are given in Table 3. It is worthy of note that those

TABLE 2.—CLASSIFICATION OF ACCEPTED CANDIDATES IN SURGERY

Classification	Number	Per Cent. of Total
A plus	1	0.038
A	24	0.912
B	137	5.213
C	388	14.764
D	360	13.697
Qualified as assistant	590	22.450
Qualified as junior	937	35.654
Qualified as junior, minus	190	7.153
Qualified, minus	1	0.038
Total	2,628	

rejected were not sufficiently well qualified to be recommended for special training in the courses in operation. In other words, they could not be considered as raw material, as being any more qualified for training in the specialties in which they claimed to be expert than was the average run of general practitioner. The approved men were sent to the specialists' courses for further instruction.

It is possible that some of these alleged experts claimed a special knowledge in the hope of being assigned to the special instruction course and thereby actually acquiring a specialty. In most instances in which a special knowledge was assumed, however, the student officer claimed to have been actually practicing the specialty. In some, the depths of ignorance were abysmal. I have knowledge of one examiner of international fame, ordinarily the essence of courtesy, who was impelled by the ignorance of a candidate who had been practicing as a specialist to say: "Doctor, by what assumption of impudence do you assume to claim yourself as a specialist?"

DEFICIENCIES OF MEDICAL EDUCATION

What has been said may be food for thought pending the accurate detailed statistical information which will later be available. Some of the deficiencies of medical education are apparent from the foregoing. Generally speaking, it would seem that the average physician has not been sufficiently well educated from a general standpoint, that the average facilities do not keep him abreast of medical progress, and that many men practicing as specialists need to be better trained. Specifically, the average physician knows little of preventive medicine, hygiene and sanitation, and these subjects should be given far more importance in the curriculums of medical schools than they are now receiving. It would seem that higher efficiency should be insured not only by the provision of appropriate facilities but also by more stringent examinations by

TABLE 3.—RESULTS OF EXAMINATIONS OF ALLEGED SPECIALISTS

Subject	Accepted	Rejected	Per Cent. Rejected
Ophthalmology	33	35	51
Plastic and oral surgery	44	27	38
Sanitation	44	17	28
Urology	100	18	15
Roentgen ray	83	4	4.6
Orthopedics	61	15	19
Otolaryngology	24	55	70
Neurology	8	2	20
Epidemiology	9	0	0
Anesthesia	22	5	18
Laboratory	19	4	17
Neurosurgery	10	1	9

the medical schools. The state boards have it in their power to insist on better qualifications for practice. The National Board of Medical Examiners can further the useful work by its standardizing of examinations, maintaining high professional ideals, and making its certificate the reward only of unusual professional excellence.

CONCLUSION

I cannot forbear to express my admiration at the manner in which the profession in uniform adapted itself to conditions. Its members accepted cheerfully the results of the stock taking of their qualifications, even though the latter might not have been flattering. They cooperated in every way to remedy the defects thus made apparent. Their eyes were opened to any shortcomings of the profession as a whole, and it is safe to assume that their military experience has shaken them out of complacency, and given them new ideals and broader purposes. One of the results of the war will be a better and more competent medical profession, the members of which will look to the medical educators of the country to set high ideals and provide the facilities for their attainment.

Intermediate Host of Liver Fluke.—M. Muto has found that the *Clonorchis sinensis* has a second intermediate host. The first host is a river or lake snail; the second host a fish. The species of snails and fish involved are described in his report in the *Japan Medical World*, Feb. 2, 1919.

THE EPIDEMIC RESPIRATORY INFECTION AT CAMP CODY, N. M.

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CAMP CODY, DEMING, N. M.

Sept. 24, 1918, there was admitted to one of the general medical wards of this hospital a soldier who had just come from Camp Dix, N. J., with prisoners. He gave a history of having been sick for three days on the train with headache, rhinitis, general aching, soreness in the chest, and cough. In addition, he presented a well marked pharyngitis. Within twenty-four hours from admission, we were struck with certain unusual features which his case presented. The pulse was slow in proportion to the high temperature. The respiratory rate was greater than physical signs warranted, and the leukocyte count was 4,800. Repeated physical examinations on that day finally revealed a few crepitant râles near the angle of the right scapula. In the afternoon of this second day, cyanosis of the finger tips became noticeable, and an ashy color of the face appeared. The condition in the lung spread rapidly to the left lower lobe posteriorly, and on October 1 he died. This was our introduction to the acute respiratory disease which was then prevalent in the Northern and Eastern camps.

Our epidemic may be said to have begun, Oct. 1, 1918, with the admission of nine cases which were diagnosed influenza, and from the standpoint of this report, it closed, Dec. 1, 1918. During this period there were admitted to the hospital 3,265 cases; the day of the greatest number of admissions was October 26, when 378 patients came in. October 30, the hospital, though its normal capacity is 1,200 beds, was accommodating 2,153 patients, of whom 1,899 had influenza or pneumonia. In 624 instances, or 19 per cent. of the 3,265, pneumonia was diagnosed. Death occurred in 7.3 per cent. of the total number of cases admitted, and in 38.4 per cent. of the pneumonias. Two hundred and forty deaths was the toll during the period mentioned.

At the beginning of the epidemic there were 4,239 officers and men in the camp. Of this number 637 had come into the hospital by October 21. As indicated in Chart 1, we had every reason to consider the epidemic abating at this date; admissions were declining. Major R. T. Woodyatt, then chief of the medical service, wrote in his diary, "The condition seems to be well in hand and the epidemic under control." But about this time 5,000 men of a new draft began to arrive. Many were brought from the train direct to the hospital.

With the appearance of these men in camp, the admission rate climbed rapidly. Seventy-five nurses of our personnel of 100 were affected with the disease; of these, five died. Ten medical officers contracted it, though none succumbed. The greatest number of soldiers in camp during the period from October 1 to December 1 was 11,163.

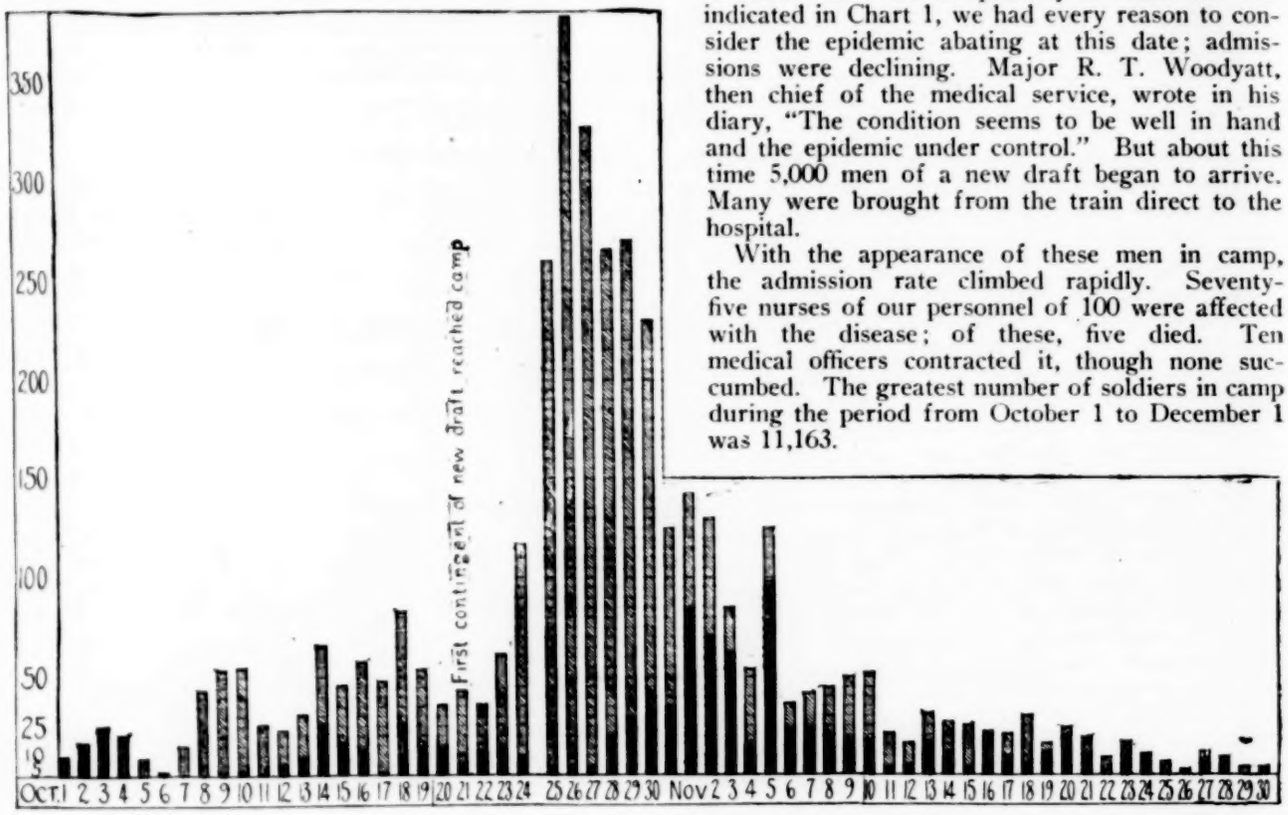

Chart 1.—Daily admissions for influenza (shown by diagonal shading), daily incidence of pneumonia (crossed shading), and daily deaths (solid black).

ADMINISTRATIVE MEASURES FOR THE CONTROL OF THE EPIDEMIC

The camp authorities early instituted general measures to prevent the spread of the disease. Quarantine of the camp was established, congregations were prohibited, and a 5 foot space separated individuals at mess. Head to foot sleeping was insisted on. Bulletins were posted, giving instructions as to how best to avoid the infection and to keep up and improve the general health. Examinations were made twice a day of every soldier in the camp in order that detection of the disease in its incipience might be accomplished and new cases isolated promptly in the base hospital.

To the enlisted men an explanation was made of the early characteristics of the malady in order that it might be recognized, and they were urged to report to their medical officers for examination as soon as the symptoms were noted.

In the hospital, wards were designated for the isolation of these cases. Sheets were hung, providing a cubicle for each patient. Masks were worn by patients and their attendants at all times. Mess utensils were disinfected by boiling after each meal. The sputum cups were emptied and disinfected twice daily. Bags, with paper napkins, were used for the collection of nasal discharges. So far as possible, the air space allowance, as for pneumonia, was provided. Convalescents were not allowed to congregate in the wards, on the porches, or in the lavatories. A spray of dichloramin-T was used by nurses, attendants and officers. Antiseptic hand solutions were conveniently placed for those whose duties brought them into the ward. The wards were kept at an even temperature of about 80 F., though freely ventilated at all times. No patient was allowed to leave his bed until he had been forty-eight hours without fever. A convalescent hospital was established to which those patients whose condition, strength and period without abnormal temperature permitted it were sent in order to complete a ten day convalescence. To accommodate the vast number being admitted, beds were placed in the enlisted men's barracks, on porches, and in the corridors between the wards.

When pneumonia began to develop, special wards for the handling of these cases were set apart. Here too, the porches had to be used. During the height of the epidemic we were very grateful to receive the help of twenty-four nurses' aids sent by the Mountain Division of the Red Cross of Denver. Throughout the epidemic we received the cooperation and utmost assistance from the camp surgeon and other camp authorities. Medical officers from the 322d Sanitary Train and of the tuberculosis examining board were sent to assist in the wards. Their services were invaluable.

Chart 2.—Effect of an intravenous injection of bacterial filtrate: *A*, white blood count, 7,500; bacterial filtrate, 1 c.c. intravenously, 3 p. m.; *B*, white blood count, 10,000; bacterial filtrate, 2 c.c. intravenously, 1 p. m.; *C*, white blood count, 11,000; *D*, white blood count, 11,500.

LABORATORY FINDINGS IN INFLUENZA

Laboratory investigations were made during the first ten days of the epidemic in eighty typical cases of influenza. At the time of examination, none of these patients presented any physical signs of pneumonia or other complication. Nasopharyngeal and sputum cultures, blood cultures, blood counts and urine examinations were made in practically all of these cases.

Assuming that droplet infection was the most important factor in the dissemination of the disease, the bacterial florae of the nasopharynx and sputum were studied in detail. Nasopharyngeal swabs, obtained by means of West tubes, and specimens of sputum collected in sterile Petri dishes, were inoculated into blood agar and serum bouillon. Considerable pains were taken to identify colonies by subcultures in differentiating mediums. In order to gain some idea of the virulence of the organisms, fifty-eight white mice were given intraperitoneal injections of sputum.

It was found that there were five predominating pathogenic organisms: pneumococcus, *B. influenzae*, *Micrococcus catarrhalis*, staphylococcus and streptococcus, both hemolytic and nonhemolytic. Intraperitoneal inoculations of the pneumococcus, staphylococcus and both forms of streptococci were fatal to white mice. Injections of cultures of *B. influenzae* and *M. catarrhalis* produced only toxic symptoms in the mouse.

Nasopharynx and Sputum Cultures.—In eighty cases investigated, the organisms recovered from both the throat and sputum cultures showed the pneumococcus present in 90 per cent.; *B. influenzae* in 46 per cent.; *M. catarrhalis* in 84 per cent.; hemolytic streptococcus in 14 per cent.; nonhemolytic streptococcus in 26 per cent., and staphylococcus in 20 per cent. Colonies of both *B. influenzae* and pneumococcus were found in 41 per cent. of the plates. A few plates showed colonies of all these organisms. In many cases it was difficult to tell which was the predominating organism, and such a classification was given up as being unsatisfactory. Of the fifty-eight white mice that received intraperitoneal injections in 1 c.c. doses of ground sputum, nine, or 18 per cent., died. From seven of these the pneumococcus alone was recovered in the heart blood; from two, the pneumococcus and *B. influenzae* were recovered. The foregoing bacteriologic observations indicated to us that *B. influenzae* was not the specific organism.

Blood Cultures.—Fifty-four blood cultures were made in this series of eighty cases, all of which remained sterile.

Blood Counts.—The average of eighty leukocyte counts was 6,780. In fifty-four cases, or 67 per cent., the count was less than 8,000. The highest count of the series was 22,600, and the lowest 3,300. The differential count was not remarkable.

Urine Analysis.—Sixteen specimens, or 20 per cent. out of seventy-eight, showed a trace of albumin. Two cases showed considerably more than a trace, with a few granular and hyaline casts.

In connection with the experimental work, it is interesting to note that very soon after the epidemic of influenza reached this camp our laboratory guinea-pigs, housed in a small building beside the laboratory, began to die. At first it was thought to be the result of food poisoning, but a necropsy on a dead pig revealed unmistakable signs of pneumonia. The mucosae of the trachea and bronchi were deeply injected and covered with a glairy, serofibrinous exudate. Cultures and smears from this exudate and pieces of lung tissue revealed pneumococci in large numbers, a few streptococci and small gram-negative

bacilli, identical in every way with *B. influenzae*. These observations were confirmed in subsequent necropsies. The guinea-pigs were sick from two to four days before death. During this time, the sick animal trembling from chills, with hair ruffled, sat huddled up in a corner of the pen, moving about only to eat. This it would do until shortly before death. The respirations were rapid and wheezing; the characteristic shrill whistle became scarcely audible. The animal was apparently in a stupor which gradually deepened until death supervened. Altogether, it presented the picture of a profound intoxication. Just before death the animal would fall on one side, rise a time or two, then make a few feeble efforts to do so again. Within fifteen or thirty minutes it would die after several rather weak, clonic, convulsive movements.

All of the pigs in a batch of thirty died within three weeks. Fifty more were received from El Paso, Texas, just about this time, four of which were dead on arrival. The others were apparently healthy. These were placed in a different room of the animal house, which had not been in use for several months. It was thoroughly cleaned and supplied with fresh hay, which was changed daily. A heater was placed in the house, and every effort made to keep this new batch clean and healthful. No deaths occurred for about two weeks. One morning one pig was found dead, and within three weeks all of this second group had died just as the first had done. Segregating the sick animals did not save the others. It was planned by one of us (F. H. L.) to carry out a more detailed investigation of this epidemic among the animals which was so strikingly similar to the influenza epidemic in man, but an attack of influenzal pneumonia prevented the carrying out of the plan.

CLINICAL OBSERVATIONS OF INFLUENZA

Little need be said of the symptomatology of this disease. It differed in no particular, at this camp, from that reported in other localities. From the first, the symptoms were characteristic; there was little chance of confusing it with the ordinary respiratory infections.

The onset was more frequently sudden than otherwise, with chill or chilliness, cough, backache, headache, and pains in the chest and limbs. Coryza was frequently present, but the nasal discharge was of comparatively small amount. Injection of the pharyngeal mucous membrane was commonly noted. Epistaxis was not unusual. Physical examination of the chest was, as a rule, barren of results in the early stages, though occasionally sibilant and sonorous râles could be elicited. Gastro-intestinal symptoms, nausea and vomiting were uncommon. Aside from drowsiness and headache, few symptoms of nervous system involvement were noted. The pulse was remarkably slow. The respiratory rate was but slightly elevated, and the temperature range was from 100 to 104.

The course of the disease was from three to five days, with the temperature declining by sharp lysis in uncomplicated cases. Subsequent prostration was no more pronounced than would be expected in any febrile disturbance of the same duration. Few complications, other than that of pneumonia, were seen. Otitis media was present in a very small proportion of cases, and in these it was of low virulence. No death was ever attributed to influenza alone.

The treatment was symptomatic. Acetylsalicylic acid or acetylsalicylic acid and codein were used to relieve aching. Simple expectorants, with or without opium, were given for cough. Initial purgation with oil was routine. Food, liquid and soft, was given at frequent intervals, with night feedings to those whose condition was unsatisfactory.

PNEUMONIA

As mentioned above, pneumonia occurred in 624 instances. In type, it was with few exceptions of a lobular variety. Clinically, it was considered a hemorrhagic atypical bronchopneumonia. The massive consolidations were thought to be the result of the confluence of contiguous inflamed areas. It originated with equal frequency in the right and left basal lobes posteriorly. In only a very few cases was it noticed first in other locations.

TABLE 1.—COMPARISON OF TWO HUNDRED AND FORTY FATAL AND TWO HUNDRED AND FORTY NONFATAL PNEUMONIA CASES

	Fatal	Nonfatal
Number of days from pneumonia recognition to death	General average, 4.9 days	
Number of days from pneumonia recognition to normal temperature	.....	General average, 3.9 days
Number of days in hospital before pneumonia occurred	General average, 3.8 days	General average, 4.0 days
Number of days with fever, dating from admission	General average, 8.5 days	General average, 7.9 days
Mental disturbance	Recorded in 88 cases	Recorded in 13 cases
Pain in chest	Recorded in 33 cases	Recorded in 15 cases
Pulse	In 50% the rate was slow in proportion to temp. (exclusive of last 36 hrs.)	In 76% the rate was slow in proportion to temp. throughout entire illness
Respiration	In 68% of the cases the rate was over 36 per min. (exclusive of last 36 hrs.)	Only 10% of cases reached a rate of 36 per min. or over, during entire illness
Leukocytes	In 48% of cases the count was below 9,000; general average in uncomplicated deaths, 10,000	In 40% of cases the count was below 9,000; general average in uncomplicated cases, 11,400
Cyanosis	Recorded in 155 cases	Recorded in only 28 cases
Temperature	Higher level, 103 to 105 degrees with slight daily remissions	Lower level, 101 to 104 degrees with more marked daily remissions

In reviewing the records, certain interesting, though probably unimportant, figures have been obtained:

1. It was found that the average period of temperature, from admission into the hospital until death or normal temperature occurred, was approximately eight days.

2. The patients were, on an average, in the hospital four days before pneumonia began, or at least, until it was recognized.

3. From the date of recognition until death occurred, or until normal temperature was reached, was, respectively, 4.9 and 3.9 days.

Table 1 is interesting in that it indicates the symptoms on which prognosis depended, namely, respiration, cyanosis and a disturbance of mentality. We think that the leukocyte count comparison is of little value, as in most of the cases only one count was made, and that, soon after admission. The temperature in the fatal cases ran at a much higher level, in the majority of instances, than in the nonfatal ones.

The comparative bacteriology of the two series (the fatal and the nonfatal) is identical. Pneumococcus Type IV is the predominating organism in both, with the hemolytic and the nonhemolytic streptococcus fre-

quently associated, and at times being independent. The presence of the latter organism did not seem to influence the mortality.

LABORATORY FINDINGS IN PNEUMONIA

With the development of pneumonia as the serious complication or sequel of a large number of influenzas, laboratory investigations were centered on these cases.

Blood Cultures.—Blood cultures were made in 248 cases of influenzal pneumonia. In only four of these, or 1.6 per cent., were organisms recovered, the findings being hemolytic streptococcus in one case and pneumococci in three cases, of which one was Type II, one, Type II, atypical, and one, Type IV. Many cultures made within a few hours before death remained sterile.

It was surprising to find such a small percentage of positive cultures in this epidemic. In two previous series (in the spring and summer of 1918) of pneumonia blood cultures, one consisting of ninety-two cases and the other of 180 cases, 26 and 18 per cent., respectively, were positive. The technic was the same for the two series.

Sputum.—The character of the sputum varied greatly. Many specimens were as thin and watery as saliva, and, being unfit for typing, had to be rejected. A fairly common specimen consisted of a few mucopurulent, slightly blood streaked, friable clumps floating in a thin, limpid liquid. These masses, when washed and ground, yielded fairly good typing specimens. The tenacious, glairy, blood streaked sputum, ordinarily seen in lobar pneumonia, was very rare in this series. The character of the sputum seemingly bore no constant relation to the bacterial flora.

Three hundred and forty-eight specimens were typed. Smears were made from the original specimens, blood plates poured and streaked, Avery's blood broth inoculated, and in about 50 per cent. white mice were given intraperitoneal injections to check the typing. On the whole, the typing was far less satisfactory in this series than it had been in the previous two series mentioned above. The readings of the agglutination and precipitin tests were far less clear cut. Yet the method used and personnel were the same.

TABLE 2.—TYPES OF PREDOMINATING ORGANISMS

Predominating Organisms Determined from Plates	Number of Cases		Per Cent. of Total	
Pneumococcus:				
Type I	9		2.60	
Type II	7		2.01	
Type II, atypical	24		6.89	
Type III	14		4.02	
Type IV	162		46.55	
		216		62.07
Streptococcus:				
Hemolytic	37		10.63	
Nonhemolytic	54		15.52	
		91		26.15
		307		
Predominance of any organism questionable	41			11.78
		348		100.00

Table 2 gives a percentage classification of the organisms predominating, so far as it was possible to determine predominance.

Table 3 shows the comparative frequency with which colonies of the five predominating organisms were found in the sputum cultures.

Blood Counts.—The average leukocyte count of 350 cases in the influenzal pneumonia wards was 9,480. Of these, 58 per cent. were 3,000 or under, and 73 per cent. were 12,000 or under. In only 5.4 per cent. was the count above 25,000 per cubic millimeter. This is a striking contrast to the high leukocytosis so universal in pneumonia.

PATHOLOGY AND POSTMORTEM BACTERIOLOGY

We were impressed with the fact that, taken as a whole, the patients who died were, if anything, somewhat better nourished and more robust than the average individual. The rapidity with which death took place precluded much external change. Postmortem lividity was usually marked; the finger nails and mucosae were very cyanotic. In about one half of the cases a foamy, blood-stained liquid ran from the nose and mouth when the head was lowered.

TABLE 3.—COMPARATIVE INCIDENCE OF THE FIVE MOST FREQUENTLY FOUND ORGANISMS

	Number of Cases	Per Cent.
Pneumococcus	310	89.1
Streptococcus	222	63.3
B. influenzae	80	23.0
M. catarrhalis	21	6.0
Staphylococcus	30	8.6

In all except one of the sixteen cases examined at necropsy, the postmortem picture was strikingly uniform. This exceptional case presented all the characteristics of a true, dry, lobar pneumonia. We shall try to describe the others as a group, limiting the detailed description to the respiratory tract.

The mucosae of the trachea and bronchi were intensely red, slightly edematous, and covered with a red, mucopurulent exudate. In many instances the smaller bronchi were filled with a red foam. The peribronchial lymph nodes were twice or three times normal size, very red, soft, and the cut surface granular. No changes were noted in the mediastinal space.

The lungs presented a picture quite distinct from anything we have seen before. The pathologic changes were certainly not those one is accustomed to see in the ordinary lobar pneumonia, nor were they typical of bronchopneumonia. In fact, the terminal hypostatic pneumonia, sometimes seen in the aged, compares more nearly, in gross characteristics, than does either of the other types.

In the fifteen cases that we have chosen to designate as atypical, hemorrhagic bronchopneumonias, the pneumonic process has been bilateral. In nine cases it was of nearly equal extent on the two sides; in six it was decidedly more pronounced on one side than on the other. In three cases there were extensive, dense, pleural adhesions; in four, there were recent, friable adhesions; in eight, the lungs were free. In two cases, there were 500 c.c. and 700 c.c. quantities, respectively, of a dark red, serosanguineous exudate. Both parietal and visceral pleurae were deeply injected. The lungs were voluminous and heavy. As a rule the posterior half or three fourths of the lung were a dark, purplish red, the remaining anterior portion, gray or pink. That this appearance was due to the filling of the posterior portion with dark red blood could be clearly demonstrated by an anteroposterior section. The posterior portion felt uniformly firm, yet somewhat resilient. The anterior part, especially of the middle and upper lobes, was elastic, soft, and air containing; here sometimes a discrete, irregular, consolidated area could be felt.

On section, a profuse bloody exudate welled from the cut surface of the consolidated portion. With

slight pressure, 300 c.c. of this liquid could be drained from a single longitudinal section. That the firmest portions of the lung contained air could be demonstrated by the presence of numerous air bubbles in the exudate. Small sections from the more dense areas would barely sink in water; other sections floated. After the surface of a section had been squeezed and washed, the polygonal boundaries of the lobules could be plainly seen. A section through the anterior, air containing portion, which was rather sharply demarcated from the posterior consolidated portion, revealed a comparatively dry cut surface. Twelve out of thirty lungs presented peribronchial areas of consolidation from 1 to 4 cm. in diameter, in this air containing portion. The cut surfaces of these isolated areas bulged slightly, and were dark gray but not hemorrhagic. A mucopurulent exudate could be expressed from the bronchioles involved. These areas were typically those of bronchopneumonia. The marked hemorrhagic, edematous element was entirely lacking in this upper and anterior half of the lung; in fact, the gravitation of the blood and exudate to the posterior portion of the lung was striking.

TABLE 4.—POSTMORTEM BACTERIOLOGIC FINDINGS

Case Number	Organisms from Lung Cultures	Organisms from Heart's Blood
1	Pneumococcus Type II	Pneumococcus Type II
2	Pneumococcus Type III	Pneumococcus Type III
3	Pneumococcus Type IV	Pneumococcus Type IV
4	Pneumococcus Type IV	Pneumococcus Type IV
5	Pneumococcus Type IV	No growth
6	Pneumococcus Type IV and B. influenzae	Pneumococcus Type IV
7	Pneumococcus Type IV and B. influenzae	No growth
8	Streptococcus, nonhemolytic	No growth
9	Streptococcus, nonhemolytic and hemolytic	Streptococcus, hemolytic
10	Streptococcus, nonhemolytic and hemolytic	Streptococcus, nonhemolytic and hemolytic
11	Streptococcus, nonhemolytic and hemolytic	Streptococcus, nonhemolytic and hemolytic
12	Streptococcus, nonhemolytic and hemolytic, and pneumococcus	Streptococcus, nonhemolytic and hemolytic
13	Streptococcus, nonhemolytic and hemolytic, and pneumococcus	Streptococcus, nonhemolytic and hemolytic
14	Streptococcus, nonhemolytic and hemolytic, and pneumococcus	No growth

Gross changes in the heart or pericardium were not encountered. We found no evidences of dilatation on either side; the muscle was firm; the ventricles, usually contracted, contained a small amount of dark, semiclotted blood. The "chicken-fat" clots, often observed in pneumonia and slow deaths, were not found. Only the changes usually resulting from the toxemia of a severe infection were noted in the other viscera. We found no marked evidences of nephritis. The average weight of the spleen was 240 gm. It was usually of firm consistency; the cut surface moist and purplish red. A small amount of red, gruel-like pulp could be scraped from the surface. The bone marrow was pale, and quite noticeably dry: an observation in keeping with the leukopenia.

Bacteriologic cultures were made from the lungs and the heart's blood in fourteen cases.

CLINICAL OBSERVATIONS OF PNEUMONIA

In considering the clinical features, complications and treatment, we believe the value of personal observation will outweigh that of figures and statistics, since the attention to sick and dying men left insufficient time for the compilation of accurate data. It appeared, from the large number of cases (50 per cent.) that were definitely diagnosed as pneumonia, on the third, second and even the first day after admission, that many of them must be considered as primary lung infections and not in the light of true complications of influenza at all. We feel that this is true because with the onset of symptoms, soldiers from the camp were immediately sent into the hospital. Then too, in the majority of cases, there was no definite onset of pneumonia, as would be indicated by sudden increase of temperature, chill or other symptoms. Rather, there was from admission a gradually increasing toxemia, a gradual rise of temperature and respiratory rate, with the recognition of the existence of the lung disease dependent entirely, in most instances, on auscultatory findings. In 25 per cent. of the cases, however, there was a break in the temperature, a short remission or an intermission; then with a chill, an epistaxis, or a pulmonary hemorrhage there followed a sharp rise and the development of typical pneumonia findings.

Unquestionably, many patients diagnosed as having influenza of a severe type, who recovered and were sent to duty, had a slight pulmonary involvement which passed unrecognized. For this reason, it would seem that the mortality rate should be based on the total number of influenza cases admitted, rather than on the recognized pneumonia cases, since the recognition of the latter was dependent on the examiner's skill and the time he had to devote to each examination.

Physical Signs.—The earliest of the physical signs elicited and the one to which we attached the greatest importance was the finding of persistent showers of crepitant and subcrepitant râles. As the disease progressed, evidences of varying degrees of consolidation became manifest: bronchovesicular or bronchial breathing, increased voice and breath sounds, and dulness on percussion. Of the latter it may be said that the note was often almost flat, the result, evidently, of the intense inflammation of the lung and the filling of the vesicles and bronchioles with blood or exudate. Many cases were characterized by suppression of breath sounds, diminution of fremitus, and this dull-flat note. Often these findings led to unproductive aspiration. In only a few instances did the process stop with no other finding than that of crepitant râles.

The sputum, as a rule, differed from the thick, tenacious sputum of lobar pneumonia, in that it was more often purulent or, as seen in many cases, a thin, serosanguineous discharge. In some instances, large quantities of the latter type were expectorated, suggesting pulmonary edema by its fluidity, although it was not frothy. Nummular sputum was frequently seen.

One of the most interesting and alarming features was that of cyanosis. Often it was noticed before any other symptoms suggesting the serious condition of the patient manifested itself, and not infrequently even before the physical signs of pneumonia had been discovered. It varied in intensity from a slight duskiness of the face and finger-tips to that of the extreme grade in which the skin and mucous membrane were lilac. No satisfactory explanation of the exact cause of this cyanosis was given. It occurred in cases in which the lung involvement was slight. It was absent, at times, in cases with extensive lung involvement. It was not due to embarrassment of the right heart, as careful physical examination did not indicate right-sided failure of this organ. It was suggested by Major E. A. Duncan that the explanation was to be

found in the action of the toxin on the alveolar epithelium, the resultant devitalization interfering with the normal functioning of these cells. The possibility of a vasodilatation leading to pulmonary congestion and edema also was suggested. Regardless of its cause, it was of ominous portent, and its clearing or absence was considered a very favorable omen. In Table 1 it will be noted that of the 240 patients that died, it was specifically noted in 155, and that, on the other hand, the records of an equal number of nonfatal cases mentioned it only twenty-eight times.

The respiratory rate, in our milder cases, was not greatly elevated. In fact, the records show that in 84 per cent. of the patients that recovered, it did not at any time go over 36 a minute. On the other hand, in the fatal cases the rate was high, and in 68 per cent. of these it was over 36, and this exclusive of the last thirty-six or forty-eight hours, when it frequently reached 50, 60 or even 70 a minute. The combination of cyanosis and dyspnea made the term of the older authors, "suffocative catarrh," particularly apt and expressive.

In the fatal cases the frequent appearance of indications of mental impairment was noteworthy. It varied in degree from simple drowsiness, as seen in the initial stages, to a slight mind wandering from which the individual might be called back to full consciousness by a spoken word. In some individuals it was manifested by a complete coma, and in others by an active delirium for which restraining sheets were necessary. This necessitated, in the severe cases, constant watching, since at times, patients, even in their terminal twenty-four hours, would attempt to leave their beds. In those that recovered, such symptoms were unusual; and when they did occur, the delirium was usually quiet. It was found in many of the patients presenting active mental symptoms, that there was an increase of intraspinal pressure with or without the evidence of actual meningitic inflammation. Unfortunately, the relief of this pressure by spinal puncture did not seem in any way to alleviate the disturbance. Associated in this syndrome there frequently appeared a general muscular tenseness, not often of sufficient degree to give rise to a positive Kernig's sign, but sufficient to offer resistance to every passive movement. Shivering, twitching, tremors and subsultus tendinum were present. These were considered cases of meningismus if the laboratory reported increase in cell count or organisms in the spinal fluid.

Herpes was unusual. Jaundice occurred in a small percentage. Nausea and vomiting were infrequent. The cheek flushing of lobar pneumonia was seldom observed. When seen, it was most often found that a pleural effusion complicated the pneumonia. Practically all of the patients developing empyema showed this symptom. No purpuric spots were noticed. In the most serious cases the temperature was high with slight morning remissions. A few, however, had a low temperature notwithstanding their dangerous physical condition. Mouth temperatures in the moribund were very unreliable. The difference between the temperature curve of the severe and of the mild case was not so much in the height of the afternoon temperature as in the degree of the remission.

Termination.—Crisis was very unusual, lysis being the rule. Death, in the majority of instances, was quiet and easy. The pain in the chest, which had so often annoyed in the early stages, had been relieved probably by slight fluid accumulation; the toxemia or the products of semiasphyxiation had so benumbed the sensorium that the patient, unmindful of his dyspnea, died in comparative comfort.

COMPLICATIONS

Of the complications, the most frequent was that of pleuritis with exudate. In the group of fatal cases, a serofibrinous effusion of sufficient quantity to merit attention was recorded in twenty instances. Seven of these became purulent. In the nonfatal group it was more common, and resulted in thirty empyemas. The bacteriology of the fluids examined showed the streptococcus to be present alone in 36 per cent., the pneumococcus alone in 36 per cent., the streptococcus and pneumococcus associated in 20 per cent., and the staphylococcus in 8 per cent. A striking feature was the frequency with which the accumulation, probably beginning in a fissure, would press the lobes apart, giving a V-shaped area of fluid as seen with the roentgen ray, with the point of the V at the hilum of the lung and the open part at the chest wall. Physical examination in these cases naturally showed an area of compressed lung both above and below the fluid.

Otitis media was infrequent, although next in incidence, to the pleurisy. Phlebitis of the left leg occurred in three instances. Furunculosis and a tendency to small abscess formation was noted in a few cases. One case of cerebral thrombosis was recorded. Pulmonary edema, as a terminal condition, was often seen. Pericarditis was not found, and but one instance of acute endocarditis was observed. Meningitis with pneumococci in the fluid was recorded seven times.

Relapses or recurrences were unusual. Remissions in the severity of the process with subsequent intensification of symptoms, as early involved lung areas improved and new areas became infected, were seldom observed. Two cases of subcutaneous emphysema were recorded; both patients recovered. Spontaneous pneumothorax occurred in two instances. The picture of mild neurocirculatory asthenia was seen many times in convalescents. Reactivated, chronic tuberculosis was an unusual finding, in spite of the fact that many of our patients had never had their induction examination. Very few mental or nervous sequelae came to our attention. It was not unusual to find, long after recovery, the persistence of the physical signs of fluid in the bases, in patients in whom repeated aspiration had failed to establish its presence. We thought that this was due more often to a fibrinous pleural exudate than to an unresolved pneumonic process. Crepitant and subcrepitant râles in the bases were found in some instances to persist for a period of four or five weeks from the onset of normal temperature.

TREATMENT

General Measures.— The routine inaugurated early in the epidemic consisted of free ventilation; abundance of nourishing, easily digestible food; large fluid intake; absolute confinement in bed until convalescence was well established, and hydrotherapy for fever and nervous symptoms. Acetylsalicylic acid was discontinued on the diagnosis of pulmonary disease. The cough was controlled by an expectorant syrup, supplemented with heroin or codein, if its severity so demanded. All patients were digitalized if

there was any indication of circulatory embarrassment. Whisky, camphor in oil, strychnin, caffein, atropin, epinephrin and pituitary solution were the stimulants in use. It was discouraging to note a lack of effect from any of them so many times, when stimulation was most urgently needed. Of these, it seemed that atropin was probably the most efficacious. An improvement, though temporary, in the cyanosis and dyspnea sometimes followed its use. No benefit from digitalis hypodermically or by mouth was ever established. Venesection was done but once. In a few cases, oxygen was administered; but as no improvement was noted, its use was discontinued.

Foreign Protein Treatment.—Early in October, a suggestion was made that immune serums, regardless of their nature, might be beneficial. The disease was characterized by a failure of response of the body's defensive forces. There was a leukopenia, a vasodilatation, an asthenia, and a pronounced hemorrhagic tendency. With these facts before us, we began the use of diphtheria antitoxin, hoping thereby, to increase the production of antibodies. Sensitization tests were carried out by a small subcutaneous injection. If in an hour no indications of anaphylaxis appeared, 10 c.c. were administered by vein. In forty-five minutes a sharp reaction (chill, fever and sweat) usually began. At the end of from twenty-four to forty-eight hours, if no marked improvement was observed, or if the patient was not moribund, a second dose was given. Only in exceptional instances were more than two doses used. With the progress of the epidemic and with the influx of hundreds of pneumonias, other varieties of protein were employed, such as antimeningococcic, antitetanic and antipneumococcic serums, and late in the epidemic the use of a bacterial filtrate was instituted. The latter substance, prepared from the organisms commonly present in influenza and pneumonia, was obtained from the laboratory of Dr. A. F. Schafer, Bakersfield, Calif.

In view of our death rate, which we know was about the average of that of other camps, we can scarcely make great claims for this treatment, for which we claim no originality. Nevertheless, certain conclusions are definitely fixed in the minds of the medical attendants who use it here :

1. Many cases, which appeared at their onset to be of the malignant type, would after its use show an improvement (often unexpected), with subsequent recovery.

2. No improvement resulted unless a reaction occurred. For this reason we were partial to the more concentrated products (diphtheria serum and bacterial filtrate.)

3. The same benefit was derived from the antimeningococcic, antitetantic and antidiptheritic as from the antipneumococcic serum, provided a satisfactory general reaction resulted. In other words, there was no apparent specific action of any type of serum, but the result was dependent entirely on its protein content.

4. Early administration was essential to effectiveness.

5. No harm, attributable to their use, was ever observed.

6. From the use of the serums there seemed to be a lessening of the hemorrhagic tendency.

7. While an artificial crisis was desired and anticipated, more often, when benefit did result, it came as a gradual reduction in toxemia, in temperature, and in respiration.

Of these products the bacterial filtrate was unquestionably the most satisfactory. Its concentration, the sharp reaction produced, the ease of administration (from 0.5 to 1 c.c. intravenously being used as an initial dose), and the absence of disagreeable urticarial or arthritic sequelae, all being in its favor. We regret that the stress of the epidemic prevented systematic, scientific observations of the factors that brought about the improvement and of the changes that resulted from the use of this treatment. But we who used it have definitely concluded that it was of no uncertain value in selected cases, though not by any means as much so as we optimistically felt in its inauguration.

NONTRAUMATIC HEMORRHAGE OF THE SUPRARENAL

REPORT OF CASE

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While small hemorrhages into the suprarenal, ranging in size from a pea to a walnut, have been found not infrequently postmortem, acute hemorrhagic suprarenalitis, and more especially large nontraumatic hemorrhages, are rare. The fact that in this instance *Streptococcus hemolyticus* was isolated from the blood both antemortem and postmortem, and that the case followed shortly on an epidemic of empyema at Camp Dodge due to the same organism, leads to the supposition that this organism was the exciting cause. It seems reasonable to assume that by lodgment of a bacterial embolus either in a vessel wall or a vessel itself, a dissolution of the vessel occurred resulting in hemorrhage and death. The clinical picture up to a few hours before death was that of a severe septicemia, and such was the antemortem diagnosis.

REPORT OF CASE

History.—G. S., 2704293, white man, aged 27, born in South Dakota, was admitted to the base hospital at Camp Dodge, July 17, 1918, with the diagnosis, "Felon, third finger, right hand." The mother and father, four brothers and two sisters were all living and well. Two sisters died in infancy, cause unknown. In 1910, following an acute follicular tonsillitis, the patient suffered from a mild polyarthritis which even now occasionally manifested itself by fleeting joint pains. His habits were regular. He denied venereal infection. Triple typhoid inoculation had been performed, July 1, 1918.

Course of Illness.—July 20, the felon for which the patient was admitted to the hospital was incised. Because of a recurrence it was opened again, August 16. Roentgenoscopy at this time revealed some rarefaction of the distal phalanx but no outspoken evidences of osteomyelitis. No cultures were made.

August 19, the patient developed a typical follicular tonsillitis with its concomitant symptoms and a temperature of 100.3 F. From the crypts, *Streptococcus hemolyticus* was isolated.

August 20, there was a marked general improvement; the temperature was 99, the pulse 76, and the respiration 20. This encouraged us in the belief that the entire condition was a result of the tonsillar infection. That evening at 10 o'clock the patient had a severe chill lasting fifteen minutes, followed by a succession of chilly sensations. He complained of head-

ache, generalized aching pains, and fever. His temperature was 105.2, pulse 94, and respiration 28. A general physical examination disclosed nothing other than the tonsillitis.

August 22, he complained of weakness, fever, malaise and general aching, more severe across the lumbar region. About midday a profuse nosebleed occurred which seemed to come from an erosion of the septum. There was nothing further on physical examination. In the morning the temperature was 104.8 F., with a pulse of 100, and respiration 32. It continued irregular throughout the day, falling to 100.4, with a pulse of 86 and respirations 24 in the evening. The white blood count was 10,200, with 76 per cent. polymorphonuclear cells, 14.5 per cent. small mononuclears, 7 per cent. large lymphocytes and 2.5 per cent. transitionals. The urine showed a trace of albumin, but otherwise was negative. Cultures were taken of the blood, urine and stool. From then on, the fever curve was irregular, ranging from 99.6 to 100.8, with a relatively slow pulse, from 78 to 104. No noteworthy changes occurred, however, until August 25.

August 25, the patient had another moderately profuse epistaxis, and complained of pain in the left side of the abdomen. The pain, not especially severe in its onset, continued as a steady, dull, dragging, pulling sensation, which at times became momentarily sharp and darting. It was most severe in the left flank, whence it radiated to the right iliac fossa and also to the lumbar region, where it took on the character of a severe lumbago. It passed from there down the posterior aspect of the left thigh as far as the knee. Examinations disclosed some changes. The face was flushed and the expression was bright but presented the appearance of one suffering from a severe intoxication. The left leg and thigh were semiflexed, extension exciting pain. The skin of the legs from the knees down, and likewise the forearms, was involved in a symmetrical erythema, over which areas were scattered a number of rose-colored, circinate lesions with a white center and a wheal-like periphery. They ranged in size from a split pea to a dime, were slightly elevated, and in most instances discrete and well defined. The lungs and heart were negative. The abdomen was a little distended and somewhat tense, but not rigid. Tenderness, not severe and rather diffuse, could be elicited only on pressure to the left of the umbilical area. Pressure and fist percussion over the lumbar muscles intensified the already present dull ache. The temperature, pulse and respiration in the morning were 104.8, 100 and 28, respectively, and in the afternoon 100, 78 and 24. In the evening it rose to 105.2, 104 and 30, following another severe chill. The leukocytes numbered 8,000, with 87 per cent. neutrophils, 2 per cent. basophils, 9 per cent. large lymphocytes and 2 per cent. small lymphocytes. The hemoglobin was 90 per cent. A single urine specimen showed some albumin and an occasional granular cast. The blood Wassermann test was negative, the Widal positive (the result of previous triple typhoid vaccination). The blood culture was negative for typhoid bacilli, but showed an easily recognizable *Streptococcus hemolyticus*. The stool culture was negative.

August 27, another chill occurred; but the symptoms and findings remained as described before, except that the muscular pains over the lumbar region became severe enough to require morphin.

August 28, the abdominal pain was marked, as was the pain in the lumbar region, which continued to radiate down the semiflexed left thigh. The patient's nutrition was still good, though the eyes were becoming glassy, the expression was listless, and the cheeks were sinking. The skin was dry and, though flushed, presented a brownish green, murky appearance. His sleep, which was almost constant, was interrupted by a low muttering delirium. The abdomen was distended as from a moderate degree of tympanites, but showed no dulness nor tumors, and only slight tenderness. The temperature continued irregular and the pulse relatively slow. The white blood count was 8,000 and the differential showed 52.5 per cent. neutrophils, 2 per cent. eosinophils, 11 per cent. large lymphocytes and 34.5 per cent. small mononuclears. The patient rested through the night under the influence of morphin.

August 29, at about 7 a. m., he awakened in a delirium with a temperature of 105.4, pulse 130, and respirations 32, complaining bitterly of pain in the back and the abdomen. His condition continued to become worse, and at 8 o'clock, at which time he was examined, he had sunk into coma. The eyes were glassy and white; the countenance was expressionless. The skin was ashen white, cold and clammy; the temperature was subnormal, the pulse small, weak and thready. The heart tones were slightly ringing in character, but weak and distant. The abdomen was much distended and tympanitic on percussion. No tenderness could be elicited. The patient died at 8:45 a. m.

Postmortem Examination.—External Appearance: The body was that of a well nourished, well built, young white man of approximately 183 pounds and 5 feet 10 inches long. Postmortem lividity and rigidity were present to a moderate degree. The skin was markedly blanched, but free from any lesions. The head was negative; the pupils were dilated and equal, and the teeth were in good repair. There was no palpable enlargement of any of the subcutaneous lymph nodes, and the genitalia were normal.

Body Cavities: The lungs and pleurae were normal. The heart musculature was pale and flabby; the valves were normal. The intestine was well distended and had a dry, pale appearance. With a single exception the parietal and visceral peritoneum was free from any gross lesions. In the right iliac region, on the under side of a loop of the midportion of the jejunum, agglutinating it to its supporting mesentery, was a small, circular, fibrinous exudate about 1 cm. in diameter which was surrounded by a zone of hyperemia. The intestine is separated with ease from the mesentery, and the lesion was found to involve merely the peritoneal coverings, though the bowel at this point presented a very small area of capillary congestion.

However, the greater part of the pathologic anatomy concerned itself with the condition and the position of the descending colon and the underlying hematoma. The hematoma, well confined retroperitoneally, extended from the brim of the pelvis on the left to the splenic flexure, and thence to a point in the epigastrium 4 cm. to the right of the median line in the region of the descending portion of the duodenum. It was pyramidal, each aspect, the medial and lateral, being covered by peritoneum, the separated folds of the mesocolon. The base measured 18 cm. in width. Along the entire summit the colon could be traced, having been raised a distance of 10 cm. from its normal position. The peritoneal covering of the bowel was stripped from the muscularis by the infiltrating blood tumor, which so enveloped it that only the anterior third of the circumference could be recognized.

Opening of the tumor revealed masses of clotted and some unclotted blood supported by the areolar and connective tissue it had infiltrated. The mesenteric veins and arteries were free from clots; the ascending and transverse portion of the large bowel was highly blood-stained, but otherwise free from tangible lesions. Over the pancreas external to its areolar tissue capsule the tissue was infiltrated with blood, and the peritoneal envelop of the duodenum presented an infiltration of blood under its surface. The fatty capsule of the left kidney had lost all semblance of its former self, appearing as a large, loosely gnarled mass of shredded fibrous and areolar tissue seeped in blood. In its meshes were embedded many dark red clots. Hematoma was formed from about 3,000 c.c. of blood.

On the mesial border of the left suprarenal in its anterior surface was a rent 1.5 cm. in length and 0.2 cm. in width running longitudinally. It extended through the cortex into the medulla, communicating with a small cavity 0.5 cm. in diameter. This cavity contained some liquid blood. On section the cortex about this area was blood-stained. No ruptured vessel could be found.

Microscopic Examination.—This in no way increased our knowledge as to the exact cause or origin of the hemorrhage. The medulla gave no evidence of containing more than the normal amount of blood. Between the rows of the cells of the cortex and along the paths of the afferent vessels were myriads of red blood cells, some in clusters, others distributed sparingly. This condition was most pronounced in the zona reticularis, where the enmeshing reticulum was heavily loaded with blood pigment. The parenchymal cells

were intact everywhere except those bordering on the margin of the small cavity. Here they showed some destruction.

The liver and the kidneys were pale and showed a moderate degree of cloudy swelling.

The spleen had the character of an acute splenic tumor.

RECURRENCE OF ORAL SYPHILITIC LESIONS DURING TREATMENT WITH MERCURY

REPORT OF THREE CASES *

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Recurrence of lesions of the skin and of the mucous membranes during the course of an attack of syphilis while the case is off treatment are not uncommon, approximately 3 per cent. of the admissions to the syphilitic clinic of this hospital being of this character. The most frequent form taken by lesions of this type is chancre redux. Another common form is the sore or sores occurring close to but not on the site of the original primary infection which, as McDonagh[1] states, are probably due to autoreinfection.

Besides the lesions recurring in connection with the original primary infection, whether on the penis or elsewhere, recurrent signs of generalization, such as skin rashes, mucous patches and condylomas, are by no means infrequent. The history obtained in such cases is usually that at some considerable time previously, six months to a year or longer, the patient has received the full War Office course of treatment, consisting of seven injections of arsphenamin, totaling 2.8 gm., and eight injections of mercury, the whole course covering fifty-six days, and since the completion of this course no further treatment has been received.

The purpose of the War Office treatment has been to heal the open lesions as quickly as possible in order that the man may be available for active service. Since, with the completion of this course, the man usually receives no further treatment, owing to the exigencies of the service, it is not to be wondered at that such recurrences manifest themselves, as our present knowledge of syphilis indicates that such a course of treatment is of itself inadequate to cure the disease. In the case of those patients in whom it is possible to follow for some time the course of the disease, interrupted courses of mercury and potassium iodid are given, which consist of three months' treatment followed by three months' rest, the whole covering a period of several years, depending on the severity of the case before treatment is commenced.

With this and possibly with further courses of arsphenamin, should these seem to be indicated, it was hoped that the patient would obtain a complete cure. The maximum amount of arsphenamin, however, to be given in the first year was not to exceed eleven injections, totaling 4.6 gm., given over a period of ninety-one days; and in no succeeding year were there to be more than four injections, totaling 1.8 gm., over a period of twenty-eight days. The reason for this limitation of dosage was the occurrence of a number of cases of jaundice when larger total dosage was used within this time interval. Such treatment quickly heals the open lesions and usually renders the Wassermann test negative; but three cases treated in this hospital in the past year seem to point to the fact that not only is it not curative, but it will not prevent the recurrence of open lesions, particularly in the mouth:

REPORT OF CASES

Case 1.—Private B. was exposed in April, 1917, and had an incubation period of three weeks. The case generalized before treatment was commenced, signs of generalization being a commencing macular rash. The patient was given one full War Office course of arsphenamin and mercury, followed by mercury by mouth for six weeks. There was no recurrence until Jan. 1, 1918. Examination on admission to this hospital on that date revealed the scar of the original primary lesion on the penis at the frenum. On the lateral margin of the tongue there was a papulo-ulcerative sore, the base of which was dirty and the sore itself markedly indurated. The submaxillary glands were considerably enlarged. The sore was negative for *Spirochaeta pallida*. The Wassermann test, January 22, was + + +. The patient was placed on a full course of neo-arsphenamin and mercury, which was completed, March 12. The Wassermann test, April 4, was + +. April 9, the patient was placed on three months of mercury and potassium iodid. While on this course, after he had received seven injections of mercury of 1 grain each at weekly intervals, he developed on the dorsal surface of the tongue multiple shallow ulcerations each about the size of a pea. At the junctions of the hard and soft palate there was a mucous patch about 1 inch in diameter. These lesions were positive for *Spirochaeta pallida*. The same day he received 0.6 gm. of neo-arsphenamin and 1 grain of mercury intramuscularly. The lesions healed immediately. Two months later he received 1 grain of mercury and three weeks afterward 0.6 gm. of neo-arsphenamin. Six weeks after this injection he developed an ulcer on the hard palate in which *Spirochaeta pallida* was not found. Three days later he received 0.45 gm. of neo-arsphenamin, but the lesion was very slow in healing. The following month he developed jaundice and now, three months later, the patient has no open lesions. Neurologically and serologically his cerebrospinal system is negative, but his blood Wassermann test is + + +.

Case 2.—Private L. contracted syphilis in 1917. The incubation period covered two weeks. His condition was primary when treatment was commenced. After treatment with seven doses of arsphenamin and eight intramuscular injections of mercury, the Wassermann test was negative. One year later the patient developed signs of cerebrospinal involvement, and the Wassermann test was found to be positive. He received three doses of arsphenamin and four intramuscular injections of mercury. He was admitted to this hospital a month later. Examination on admission revealed no signs of syphilis except the scar of the original chancre, which was situated on the ventral surface of prepuce; he also had a positive cerebrospinal fluid. He was placed on an interrupted course of neo-arsphenamin with a dosage of 0.45 gm. at weekly intervals, and four intramuscular injections of mercury with a dosage of 1 grain at weekly intervals. When he had completed this interrupted course, Aug. 8, 1918, the Wassermann reaction was +. Four days later he commenced a three months' course of mercury and potassium iodid. Eleven days after he had finished his eight weeks of mercury and while still on potassium iodid he developed a large ulcer, half an inch in diameter, at the lateral margin of his tongue and extending to both dorsal and ventral surfaces. The base of the ulcer was dirty. This lesion was positive for *Spirochaeta pallida*. The same day he was placed on another interrupted course of neo-arsphenamin and mercury, and the

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* From the Syphilitic Clinic, Canadian Special Hospital, Etchinghill, Kent, England. [This hospital is the main center for treatment of venereal disease among the Canadian troops in England, with a capacity of 800 beds.—Ed.]

1. McDonagh: Biology and Treatment of Venereal Diseases, London, Harrison & Sons, 1915, p. 321.

lesion rapidly healed. Other shallow ulcerations then appeared on his tongue and the margins of the gums which were negative for *Spirochaeta pallida* but positive for the organisms of Vincent's angina. These lesions extended till they involved the whole of the posterior half of the tongue, the fauces, the nasal and oral pharynx, the mucous membrane of the cheeks, the upper part of the esophagus and larynx, and the periosteum of the angles of the lower jaw. The general condition resulting from these gangrenous lesions caused the patient's death. Throughout the whole of his treatment at this hospital he was receiving intraspinal injections of arsphenaminized serum for his cerebrospinal condition. At necropsy the scar of the syphilitic lesion was plainly visible on his tongue. The pathologist's report on sections of the scar was: "The epithelium has entirely disappeared. The exposed surface is composed of fibrous tissue, scattered throughout which are many polymorphous cells. Beneath the fibrous tissue the muscle fibers show slight degeneration interspersed with areas of round cell infiltration."

CASE 3.—Private K. contracted syphilis in June, 1917, the incubation period being six weeks. He treated the primary sore himself by cauterization, but as it would not heal he was admitted to the hospital in August, 1917, with generalized syphilis. Examination on admission disclosed two sores situated on the prepuce, with no induration. The glands were all enlarged and hard. He had a faint macular rash over the trunk, limbs and forehead, and there was a mucous patch at the angle of the mouth. The Wassermann reaction was + + +. He was placed on a full course of arsphenamin and mercury. At the completion of this course the lesions had healed, and the Wassermann reaction was negative. In February, 1918, his blood was found to be + + and he was given an interrupted course of an arsphenamin preparation and mercury. The Wassermann reaction at the completion of this was negative; nevertheless he was given three months of mercury and potassium iodid. The Wassermann reaction was again negative at the completion of the treatment. After three months of rest the blood was +, and a month later the reaction was the same. He was placed on three months more of mercury and potassium iodid, of which one dose of mercury was taken by injection and the rest by mouth. Two months and a half of this course had been completed when the patient developed several shallow ulcerations and mucous patches on the tip and the ventral surface of the tongue. These lesions were positive for *Spirochaeta pallida*. The blood at this time was variable, being negative, January 6, + on the 9th, and + on the 16th. He was placed on an interrupted course of arsphenamin, and in a few days after the first injection the lesions healed.

COMMENT

Were it not for the demonstration of *Spirochaeta pallida* one would be inclined to look on these lesions as the herpetic ulcerations which Hutchinson[2] states are of common occurrence in the mouths of patients suffering from syphilis, but the finding of the organism definitely vouches for their specificity.

All three cases are similar in that the patients had received the routine War Office treatment and were all on mercury and potassium iodid when the lesions developed. The lesions did not develop at the site of former lesions, but were of the type that McDonagh[1] designates as autoreinfection. In two of the cases the general health of the patients was poor, but in the third case the general health was apparently good. In one case there was a mild mercurial stomatitis which later developed into a severe Vincent's infection, but all three were receiving careful dental treatment.

Akatsu and Noguchi[3] have demonstrated that *Spirochaeta pallida* increases its resistance to both arsphenamin and mercury in vitro. There is no reason why this cannot occur in vivo, and in these cases the resistance was increased against the mercury owing to its prolonged use, while the spirochete disappeared and the lesions healed as soon as the patient was placed on arsphenamin. There was no increased resistance against the latter substance, as the patients had all been a considerable time without treatment by it. In these cases it seems very probable that the mercury lowered the tone of the tissues of the mouth; and *Spirochaeta pallida*, being mercury fast, was given a fertile field in which to grow.

SUGGESTED MODIFICATION OF WAR OFFICE TREATMENT

While we would be among the first to recognize and record our appreciation of the good work accomplished by the British War Office in its careful study of the methods of treating syphilis and the service that has been accomplished in standardizing that treatment for the army, we know that the leader in this movement, Col. L. W. Harrison, D. S. O., is himself among the first to seek criticism and to welcome suggestions making for improvement in the methods employed.

The fact that under the present treatment such recurrences are to be encountered leads us to suggest that the routine War Office treatment be replaced by the following: During the first three weeks the patient should receive three injections of arsphenamin at weekly intervals with a total dosage of 1.2 gm. For the first eight weeks he should receive 8 grains of mercury, given in 1 grain doses at weekly intervals, and potassium iodid. For the next four weeks he should be given a tonic. When the month of rest has expired he should receive a small dose of arsphenamin and a week later a full dose, and for eight weeks mercury and potassium iodid, followed by four weeks' rest and tonics. The purpose of the small dose of arsphenamin preceding the full one is to prevent the occurrence of a dangerous Herxheimer reaction. This treatment might be continued indefinitely, though it would probably be better to give three months' complete rest in twenty-four. The object of this method would be to heal the open lesions by the first three injections. The purpose of the continued use of mercury and potassium iodid would be to carry on the sterilization of the host. Should the spirochete, however, become mercury fast the arsphenamin would be able to attack it while freely multiplying as the adult form. With this method of treatment, if carried on over a sufficient period of time, it should be possible to produce a complete cure of the disease with the minimum of danger to the patient and without recurrences similar to the cases cited.

2. Hutchinson: Syphilis, London, Cassell & Co., 1909, p. 149.
3. Atkatsu and Noguchi: J. Exper. M. **25**: 361, 1917.

Adequate Medical Service.—In these days of progress in preventive medicine there is some tendency to separate too sharply preventive from curative medicine. It should not be forgotten that an adequate medical service to the whole people will do more to prevent disease and disability than any other single measure to be considered. At present the people in the United States are paying out money sufficient for the maintenance of an adequate medical service, but fail to receive it. This money, however, is spent in such a haphazard manner that the service is not only often inadequate or worthless, but at times actually harmful. For one item—drugs—the United States spends $500,000,000 a year. This sum alone, if properly expended, would buy all the necessary drugs and add $2,000 a year to the income of each of the 125,000 physicians in active practice in the United States.—B. S. Warren, M.D., *Public Health Reports.*

ENTEROSTOMY AS AN EMERGENCY MEASURE

IN THE SURGICAL TREATMENT OF INTESTINAL OBSTRUCTION IN CASES OF GENERAL PERITONITIS FOLLOWING PURULENT APPENDICITIS

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Every surgeon experienced in the treatment of appendicitis knows that this protean disease presents itself in one of its most serious aspects when attended by a diffuse peritonitis with intestinal obstruction and distention of the abdomen. These complications often exist before the patient is brought for operation, but also frequently arise postoperatively in purulent ruptured cases. The disease now is peritonitis and no longer simply appendicitis. In this paper it is our purpose to call attention to some facts concerning the management and surgical treatment of such cases, as based on personal experience.

During the past four years, in association with Drs. Stoecks and Maxwell, we have operated in 200 cases of appendicitis. In this group of 200 cases all types of pathologic appendixes were represented. In a general classification, however, there were ninety-nine chronic cases, fifty-one acute, but well walled off, cases, and fifty acute, gangrenous and purulent cases, with general peritonitis and no walling off. It is with the last group of fifty cases that this paper concerns itself. The reason for so high a percentage (25) of peritonitic cases lies in the fact that all these patients came for operation from neighboring smaller communities, often arriving for surgical treatment as late as a week or ten days after the initial symptoms had developed. This fact itself is a potent illustration of the urgent need of surgical intervention in appendicitis as soon as the diagnosis has been made.

PRIMARY OPERATION AND SUBSEQUENT TREATMENT

As a usual operative measure, no attempt at removal of the gangrenous or ruptured appendix was made unless it was easily accessible and could be removed without much manipulation of the inflamed bowel. Whether, however, the appendix was removed or not, at this primary operation the sole aim was always to establish thorough drainage. Removal of the appendix was merely an incidental matter as compared with the main purpose of the operation, namely, to provide the most ample outlet for the discharge of pus from the inflamed visceral and parietal peritoneum. This was done by placing through the incision three or four rubber drainage tubes as deeply as possible into the abdomen, an additional one into the pelvis, and at least one through a stab wound into the most dependent portion of the abdominal cavity. The abdominal incision was never sutured but kept widely open with gauze packing. After the packing had been correctly placed, deep through and through silkworm sutures were made to prevent the wound from gaping. Thus the bowels were retained securely, while they remained within easy access from without and could be kept under constant observation.

This operative procedure constituted in its essentials our primary operation. The patients were now kept in Fowler's position, and for a period of from twenty-four to forty-eight hours they were given warm saline by the rectal drip method. This is never given continuously but intermittently in amounts varying from 4 to 6 ounces every three to four hours. The continuous method has been found unsatisfactory because of the pain and discomfort to the patient from too long continued retention of the rectal tube, and also on account of the difficulty experienced in keeping the saline at a sufficiently warm and even temperature. Because of the ease with which the gauze packing could be removed from the open wound, opportunities were offered to study the behavior of the small and large bowel. This proved of particular value in a number of cases in which, subsequent to the primary operation, intestinal paralysis resulting in marked abdominal distention developed. Here it was possible to observe the distended bowel become gangrenous and perforate. Perforation would commonly occur only in one loop of the bowel and very rarely in several.

RESULT OF THE DEVELOPMENT OF SPONTANEOUS FECAL FISTULAS

Gangrene and distention usually went together. They always preceded perforation. Wherever the distention was most pronounced and the gangrene had progressed the farthest, perforation would occur. But no sooner did a spontaneous perforation occur anywhere, either in the ileum or in the colon, than the distended bowel through this newly formed outlet evacuated much gas and a foul smelling, greenish fluid. This varied in amount from a few ounces to several pints in different cases. This briefly described picture was observed in ten cases out of the present group of fifty. They were cases that came late to operation and presented not only a ruptured or gangrenous appendix, but also, as a direct result, a generalized peritonitis. Out of this there then developed that twin picture, intestinal paralysis and abdominal distention.

All of these patients had a severe generalized peritonitis. The abdomen was distended and rigid, often so much so that the descriptive expression "drumlike" is no exaggeration. Uncontrollable vomiting existed in combination with almost complete, and often with absolute, obstipation. Enemas gave no relief. In every respect the patients presented pictures of extreme prostration. As soon, however, as a spontaneous fecal fistula developed and a thorough evacuation of the putrefied intestinal contents resulted, this picture of a moribund condition changed perceptibly and rapidly for the better. Vomiting ceased, the abdomen softened, and in a surprisingly short time patients that had appeared at the point of collapse gave hardly a sign of their former grave condition.

All of these patients recovered after draining freely for from three to seven weeks. As soon as drainage stopped, a secondary operation, the details of which will be considered later, was done, and soon afterward the patients were discharged cured.

During this time eleven similar cases had been seen in consultation after operation. In these cases there was a mortality of nine. All deaths were due to a general peritonitis and insufficient drainage from the wound. These cases were so serious and far advanced that any further surgical intervention seemed impossible. Here the ruptured or gangrenous appendix had been removed, the wound closed in the usual manner, and only a single drainage tube put in place. And

again it was noticed that these patients suffered from a tremendously distended abdomen, drumlike rigidity of the abdominal wall, cyanotic lips, and very little discharge from the drainage tube.

These patients were pictures of acute suffering which finally ended in death. Yet the cases differed in no detail from ours until the time that the spontaneous fecal fistulas developed. No sooner, however, had the fecal fistulas developed, and the bowels evacuated their foul contents, than the course was the antithesis of death. Thorough and ample drainage was not the explanation for the recovery, because when the condition has progressed to the stage of complete obstruction and intestinal paralysis, there is no more discharge of pus and exudate from the peritoneum, and at this time no amount of drainage provided is of any avail. These recoveries must rather be ascribed to the perforation of the distended and gangrenous bowel. The development of spontaneous fecal fistulas is the primary cause of the improvement in the clinical course. This received strong support from the two cases seen in consultation in which the patients recovered, in both of which fecal fistulas also developed, and recovery dated from the time when such spontaneous perforation occurred. Out of the nine patients seen in consultation that died, one other did develop a fecal fistula; but since in this case insufficient drainage from the abdominal cavity had been provided, it also terminated in death.

As far, then, as the recovery of these patients of our own series is concerned, it must be considered as primarily due to the development of a fecal fistula which allowed the evacuation of a large amount of gas and foul smelling, greenish intestinal contents, and secondarily to the early provision for thorough drainage afterward. That the last mentioned point is also extremely important was forcibly brought to mind in the one case in which a fecal fistula developed, but drainage insufficient to carry off the foul intestinal contents and discharge from the peritoneum had been provided.

CONDITION WITHIN THE ABDOMINAL CAVITY

These experiences, with our own and with the consultation cases, led to serious thinking regarding the possible actual conditions existing within the bowel and abdominal cavity. In certain patients it was observed that the entire bowel was distended, and again in others only small portions seemed to be affected. At times small portions were found which were firmly angulated so as to form short loops of distended bowel that appeared to be almost completely cut off from the remaining flattened portion. Again in some instances no outward signs of angulation were discernible, and still only short loops of bowel were gangrenous or distended.

There seem to be three hypotheses to explain this condition: First, that angulation of portions or paralysis of the entire bowel is primarily due to mechanical obstruction resulting possibly from fibrinous adhesions. Second, that it is due to the laming of the smooth muscular fibers by infiltration of the intestinal wall with inflammatory products from the intensely inflamed peritoneum. And third, that it may possibly be a direct result of absorbed toxins having their effect on the central nervous system and causing a paresis of the muscular nervous peristaltic apparatus. But these are questions the settlement of which is not here attempted. However, we observed that small portions of the bowel, almost always the ileum and rarely the colon, would angulate and become firmly matted together, being at the same time distended and gangrenous. Again, intervening portions showed no such condition beyond that of an inflamed visceral peritoneum. One is tempted, therefore, to believe strongly that the central nervous system plays no causative rôle whatever, but rather that the entire series of events must be due to local causes. There may be a plain mechanical obstruction due to angulation of the bowel as a result of fibrinous adhesions between intestinal loops, or to a paralysis of the smooth muscle fibers in the intestinal wall as a result of the intense infection involving the mucosa of the alimentary tract as well as its entire serous surface.

Such being the case, why should the surgeon idly sit by and see whether the resistance and strength of the patient is sufficient to overcome this widespread infection? Does it not seem much more logical to open this infected bowel or such portions of it as are necessary, to provide a free outlet for the infected and foul intestinal contents? Since it is sound surgical treatment to open and drain any other portion of the human anatomy in which toxic material collects and threatens life, it certainly must also be considered sound here. All the more is it true if by so doing the patient is directly and almost immediately benefited.

ARTIFICIAL FECAL FISTULAS

This was the general policy adopted in the extreme treatment of the remaining cases of this group, and artificial fecal fistulas were made in seventeen cases.

Indications for doing an enterostomy, accordingly, have been, first, a drumlike distention of the abdomen associated with uncontrollable black vomiting, particularly when no relief is obtained by gastric lavage; second, the existence of complete obstipation which in no wise yielded to any enema (the pulse and temperature play only a very negligible part in deciding on an enterostomy; many times these fail entirely to indicate the seriousness of the patient's condition); third and most important and as the chief indication, any marked diminution in the amount of drainage from the wound.

If there is not a general improvement of the patient with the decrease in drainage, then the surgeon should be in readiness at any time to perform an enterostomy. As a result, the indications for doing this operation may be thus summed up: If the wound is better and the general condition of the patient is worse, enterostomy is imperative.

Our experience with these patients has shown that an anesthetic is not necessary for enterostomy. Since the abdominal wound, except for silkworm sutures, was left wide open, the bowel can be easily reached through this original incision. The one essential, absolutely necessary, is that the fistula be made into a distended or bulging portion of the bowel. Perforation of a collapsed portion of intestine is of no value. If no well formed wall of adhesions exists, the bulging loop of intestine is brought up to the incision and sutured with one or two silk sutures into the open wound, and then the enterostomy is performed. Immediately a rubber drainage tube is inserted and sutured with catgut into this opening. The drainage tube is allowed to remain in place until the sutures have been absorbed, when it is gradually withdrawn.

This is not a temporary perforation which is to be immediately repaired as soon as the gas and intestinal

contents have escaped, but is meant to be a permanent fecal fistula. It remains such until it closes of its own accord or, failing to do this, until a future date when a complete secondary repair operation is done.

All of this can easily be accomplished without an anesthetic and with very little extra discomfort to the patient.

Usually the prostration is so severe that such pain as is caused by one or two sutures to tie the loop of bowel to the abdominal wound is hardly noticed.

It is conceivable that, owing to extensive fibrinous adhesions, complete strangulation of a loop of bowel might occur and result in only a partial evacuation of the foul intestinal contents. However, this contingency was never encountered in our cases. Perforation of a single loop of intestine was always sufficient to remove the obstructive features in these cases.

The cases of artificial fistulas behaved similarly to those formed spontaneously. As soon as a thorough evacuation of the foul contents of the bowel had occurred, a marked improvement in the condition resulted. The abdominal distention was no longer so marked. Black and fecal vomiting ceased almost immediately, and the extreme prostration gave way to a decided feeling of improvement. Patients that had a marked cyanosis, rapid pulse and high respiratory rate returned in a short time to a normal color, slower pulse and moderate breathing.

These enterostomies were allowed to become permanent fecal fistulas. Our idea was not to perforate the bowel momentarily and allow a temporary escape of gas and intestinal material and flora, but rather to provide drainage from the bowel itself until a time when the infection had been overcome and normal peristalsis again established. Therefore, if the fistula did not heal up spontaneously, it was a permanent affair lasting for three to four weeks, that is, until pus drainage ceased and a secondary repair operation could be done.

One objection that can readily be raised against the establishment of a permanent fecal fistula is that a secondary operation may become necessary. In view of the fact, however, that the secondary operation need not be done until the patient has regained his full strength, it can hardly be considered as a valid objection.

Furthermore, it does not always become necessary to close the bowel at the time of the secondary operation, because, if sufficient time elapses, nature often causes a spontaneous closure. In our present group of fifty cases, in twenty-seven of which there were either spontaneous or artificially induced fecal fistulas, seventeen healed spontaneously. In these at the time of the secondary operation it was only necessary to repair the original abdominal incision thoroughly. This is always done in order to prevent any possibility of a future ventral hernia. In only ten cases was it necessary to sew the intestine at the secondary operation. This was easily done when the opening in the bowel was large by a resection of a portion of it, an end to end or a lateral anastomosis being performed. This was necessary, however, in but two out of these ten cases. In the remaining eight we only had to close a small opening in the bowel by subserous sutures.

Out of this total group of fifty cases there were three deaths. Two of these occurred after the primary operation. Both patients had been brought to the hospital in a moribund condition and were operated on immediately, but died soon after the operation. The third patient, a boy of 6, recovered from the primary operation. At this time he had a ruptured purulent appendix, with no walling off whatever and a distribution of pus throughout the entire abdomen. During the night of the third day the patient rapidly developed a distended abdomen, all drainage stopped at once, and the patient became comatose. Our associate, Dr. Stoecks, immediately performed an enterostomy on two bulging loops of the ileum, but death followed soon. These three were the only deaths out of this series of fifty cases of acute appendical peritonitis.

Secondary operations were performed in forty-seven cases. This number includes those that had either a spontaneous or an artificially induced fecal fistula, and those remaining in which the ample drainage proved sufficient to overcome the infection in the peritoneum. In the primary operation of none of these were sutures used except for the deep silkworm sutures that were employed to prevent the abdominal incision from gaping too much. In the secondary operations not a single patient was lost, but all made uneventful recoveries. Most of these still come under our observation from time to time, and in none have any tendencies toward the development of ventral hernia been found.

COMMENT

While an enterostomy should not be done without due and sufficient cause, when the indications are once present, consideration of the annoyance and discomfort of a fecal fistula and the possible dangers of a secondary operation should not weigh heavily in the surgeon's mind. It should not prevent him from making use of this final means of saving the patient's life.

The value of an enterostomy in cases of this type was recognized years ago by the physiologist Heidenhain, who, according to our knowledge, was the first one to advocate the establishment of a fecal fistula as a remedial measure. In later years, Lund[1] of Boston advocated enterostomy as an extreme measure of last resort in selected cases in which the patients are practically moribund from septicemia. It is our contention, however, that the surgeon should never wait until a generalized septicemia from the absorption of intestinal toxins has occurred, but that the curative value of an enterostomy is secured only by performing this operation as early as possible.

Didactic discussions as to whether it is the intestinal obstruction and paralysis or the generalized septicemia resulting from it that kills is of little interest to the patient. What does interest him tremendously is that something be done that will afford him relief. This can be achieved only by removing the toxic intestinal contents. If gastric lavage fails to do this, and if drastic enemas likewise prove impotent, then the only other recourse is to make an artificial opening into the bowel. That a perforation of the bowel is not so dangerous to life as a failure to do this is illustrated in the present group of cases. Out of the entire number of patients that developed or had induced fecal fistulas, there was only one death, or a mortality of 3.7 per cent. We feel confident that this, too, could have been prevented had a fistulous opening been made somewhat earlier in the course.

With the treatment instituted in this group of fifty cases, there were three deaths, a mortality of 6 per

1. Lund, F. B.: The Value of Enterostomy in Selected Cases of Peritonitis, J. A. M. A. **41**:74 (July 11) 1903.

cent. This should be compared with a report of from 30 to 40 per cent. mortality in similar cases as reported by Kelly in 2,000 cases at Mount Sinai Hospital or with nine deaths out of eleven cases, a percentage of 80, seen in consultation by us.

CONCLUSION

In the treatment of this type of appendicitis, it is of paramount importance to establish free drainage in order to encourage the discharge of pus and infective fluids from the abdominal cavity. If this is insufficient, and drainage ceases owing to a dry peritonitis so common in intestinal obstruction and paralysis, then the latter must be relieved by the performance of an enterostomy. It is our conviction that it is not the appendicitis or even the peritonitis, per se, that kills, but rather that it is the toxins which these have caused to accumulate in a gangrenous and paralyzed bowel. Relieve that, and the reward will be the restoration of life and health to the patient in a large percentage of so-called hopeless cases.

INCREASED TOLERANCE AND WITHDRAWAL PHENOMENA IN CHRONIC MORPHINISM

A REVIEW OF THE LITERATURE *

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It is well known that individuals addicted to the use of opium, morphin, codein (Bouma,[1] Pelz[2]) or heroin (Fauntleroy,[3] Wholey[4]) are able to withstand enormous doses of these drugs — many times as large as the lethal dose for individuals unaccustomed to their use. In fact, the average daily oral dose of morphin for an addict is stated to be from 8.22 grains (Brown[5]) to 15.3 grains (McIver and Price[6]), while the daily consumption in certain cases has been reported to be as high as 90 grains (McIver and Price[6]) and 248 grains (Hinckley[7]). It has also been established that, when the administration of these drugs is discontinued in the case of individuals habituated to their use, definite withdrawal symptoms manifest themselves: In general, there is restlessness and a sense of depression in the beginning, followed by yawning, sneezing, lacrimation, coughing, retching and vomiting. Later, there is pain in the abdomen and lower extremities, diarrhea, profuse perspiration, tachycardia, marked asthenia, and irregular pulse, the latter going from extremes of slowness to extremes of rapidity. There may be complete exhaustion and finally collapse, in some cases death.

CAUSES OF INCREASED TOLERANCE

In order to explain the mechanism of the increased tolerance of the system for these drugs and the appearance of the withdrawal phenomena on the discontinuance of their use, a number of investigators have carried out experiments with animals. In general, these researches have shown that tolerance* can be induced in such warm-blooded animals as dogs (Faust[9] and others), goats, rabbits, rats and pigeons (Cloetta,[10] Morgenroth[11] and others), whereas cold-blooded animals like the frog become more susceptible (Hausmann[12]). In the case of animals, this tolerance persists for only a few days, while in human beings, it may continue for months (Bishop[13]). The theories evolved by the different investigators in explanation of these findings are both numerous and varied.

In 1883, Marmé[14] conducted a series of experiments with dogs, and concluded, from the results obtained, that morphin was converted in the body into oxydimorphin,[15] a substance having a diametrically opposite physiologic action to that of morphin. He contended that this substance produced the abstinence symptoms which make their appearance on withdrawal of the drug; required increasing amounts of morphin to neutralize its effects; and in turn neutralized the morphin, thus accounting for the increase in tolerance. This theory, however, appears to be untenable in view of the fact that Donath,[16] Stark[17] and Marquis,[18] respectively, operating under similar conditions, could not identify oxydimorphin in either the blood or urine of dogs in which tolerance to morphin had been established. Furthermore, it has been shown that oxydimorphin prepared from morphin with the aid of certain plant juices (Bougault[19]) or by the action of various oxidizing agents in alkaline solution (Schutzenberger,[20] Nadler,[21] Polstorff[22]) does not possess the properties assigned to it by Marmé. Magendie[23] found it to be inactive when administered by mouth to dogs in doses of 0.36 grain, while Kreis[24] observed that it had a very weak morphin-like action. When given intravenously, the latter found that it produced weakness which soon developed into stupor. Toth[25] found

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* For the sake of brevity, the term "morphinism" has been used throughout this review regardless of whether the drug of addiction is opium, morphin, codein or heroin.

1. Bouma, J.: Ueber Gewöhnungsversuche mit Kodein, Arch. f. exper. Path. u. Pharmakol. **50**: 353-360, 1903.
2. Pelz: Ein Beitrag zum Codeinismus, Deutsch. med. Wchnschr., **31**: 864-866, 1905.
3. Fauntleroy, C. M.: A Case of Heroinism, New York M. J. **86**: 930, 1907.
4. Wholey, C. C.: Morphinism in Some of Its Less Commonly Noted Aspects, J. A. M. A. **58**: 1855-1857 (June 15) 1912.
5. Brown, L. P.: Enforcement of the Tennessee Antinarcotic Law, Am. J. Pub. Health **5**: 387, 1915.
6. McIver, Joseph, and Price, G. E.: Drug Addiction: Analysis of One Hundred and Forty-Seven Cases at the Philadelphia General Hospital, J. A. M. A. **66**: 476-480 (Feb. 12) 1916.
7. Hinekley, L. S.: Narcotic Drug Addiction, Newark, N. J., 1918, p. 26.
8. Bouma (1903) concluded from his experiments that the ordinary laboratory animals do not acquire a tolerance for codein.
9. Faust, E. S.: Ueber die Ursachen der Gewöhnung an Morphin, Arch. f. exper. Path. u. Pharmakol. **44**: 217-238, 1900.
10. Cloetta, M.: Ueber das Verhalten des Morphins im Organismus und die Ursachen der Angewöhnung an dasselbe, Arch. f. exper. Path. u. Pharmakol. **50**: 453-480, 1903.
11. Morgenroth, J.: Zur Frage des Antimorphinserums, Berl. klin. Wchnschr. **40**: 471, 1903.
12. Hausmann, W.: Zur Kenntniss der chronischen Morphinvergiftung, Arch. f. exper. Path. u. Pharmakol. **52**: 315-325, 1904; Gewohnung an Morphin und seine Derivate, Ergeb. d. Physiol. **6**: 94-98, 1907.
13. Bishop, E. S.: Narcotic Addiction: A Systemic Disease Condition, J. A. M. A. **60**: 431-434 (Feb. 8) 1913.
14. Marmé, W.: Untersuchungen zur acuten und chronischen Morphinvergiftung, Deutsch. med. Wchnschr. **9**: 197-198, 1883.
15. This compound is also referred to in the literature as oxymorphin, dehydromorphin and pseudomorphin.
16. Donath, J.: Das Schicksal des Morphins im Organismus, Arch. f. d. ges. Physiol. **38**: 528-548, 1886.
17. Stark: Untersuchungen über die Gewöhnung des thierischen Organismus an Gifte; Inaug. Diss., Erlangen, 1887; cited by Faust, Arch. f. exper. Path. u. Pharmakol. **44**: 225, 1900.
18. Marquis, E.: Ueber den Verbleib des Morphins im thierischen Organismus, Pharm. Ztschr. f. Russland **35**: 549-552, 1896.
19. Bougault, J.: Oxydation de la morphine par le suc de Russula delica, J. de pharm. et de chim. **16**: 49-52, 1902.
20. Schutzenberger, M. P.: Note sur quelques produits d'oxydation de la morphine sous l'influence de l'acide azoteux, Compt. rend. Acad. d. sc. **46**: 598, 1858.
21. Nadler, G.: Ueber die Bildung des Oxymorphins bei vorsichtiger Oxydation des Morphins, Schweiz. Wchnschr. f. Pharm. **11**: 417-419, 1873; **12**: 38-42, 1873.
22. Polstorff, Karl: Die Einwirkung des Kaliumferricyanids und anderer schwacher Oxydationsmittel auf Morfin und "das Oxymorfin Schutzenberger's," Arch. d. Pharm. **217**: 401-424, 1880.
23. Magendie: Cited by Reil, Materia Medica, Berlin, 1857, p. 257.
24. Kreis: Cited by Herrmann, Lehrbuch der experimentellen Toxikologie, Berlin, 1874, p. 381.
25. Toth, L.: Bemerkungen zur Erklärung der chronischen Morphiumintoxikation, Schmidt's Jahrb. **229**: 135, 1891.

it to be inactive when administered by mouth or subcutaneously. He attributed the effects observed by Marmé to emboli, formed, in his opinion, as a result of precipitation which occurred when oxydimorphin was injected into the blood stream. Additional investigations demonstrating the relative inactivity of oxydimorphin and the erroneousness of Marmé's conclusions have been reported by Kobert,[26] Diederich,[27] Puschmann[28] and Gioffredi.[29]

A theory which appears more plausible and which has acquired a certain degree of acceptance was advanced by Faust[9] in 1900. From his investigations, he was led to the conclusion that the system in the case of dogs acquires the power to destroy increasingly large amounts of morphin. He was able to recover from the feces 66 per cent. of the initial dose administered hypodermically. In the feces of the twenty-first to twenty-fourth days of administration, he recovered only 26 per cent.; from the twenty-ninth to the thirty-second days, 8 per cent.; from the thirty-sixth to the fortieth days, 4 per cent., and later, none at all, even though the quantity administered was fifty times as great as that given in the beginning. These dogs, according to his account, showed the same symptoms of chronic morphinism as manifest themselves in man. They showed signs of uneasiness for the drug, became very restless when the time for injection drew near, and one dog is reported as having given every sign of satisfaction when the needle was introduced. As the organs of these animals after death were found to contain only very small quantities of morphin, Faust concluded that tolerance was established solely through the increased power of the organism to destroy (oxidize) morphin.[30]

DESTRUCTION OF MORPHIN IN THE BODY

That morphin is destroyed to some extent in the living organism, there is no apparent reason for doubting. That it is destroyed in increasingly large amounts during the course of tolerance is a contention supported by considerable evidence. Thus, Albanese[31] observed that the livers of tolerant dogs possessed the property of destroying relatively large amounts of morphin in vitro if the animals were deprived of the drug for three or four days preceding death, and that the destructive power was commensurate with the degree of tolerance that had been established. Dorlencourt[32] duplicated these experiments and reported similar results. Cloetta[10] and Babel,[33] respectively, found that morphin was also destroyed in vitro by brain pulp, and to a lesser degree by the tissues of other organs. The experiments of Langer[34] with heroin also have a bearing in this connection. In working with dogs, he found that heroin was excreted principally in the urine, although a small amount also appeared in the feces. During the course of tolerance, he observed that the amount in the urine became less and less, so that finally none could be detected in either the urine or feces.

Even though we accept the foregoing contention, that the organism during the course of tolerance acquires the power to destroy increasingly large amounts of morphin, as an established fact, it does not necessarily follow that this condition is a causative factor in the production of tolerance. It may only be a concomitant phenomenon. In fact, this is the opinion of Cloetta, whose theory in explanation of the mechanism of acquired tolerance was published in 1903.

TOLERANCE OF THE BRAIN FOR MORPHIN

Cloetta appears to have been impressed with the fact that the brain rapidly develops a tolerance for morphin in comparison with the other organs of the body. In search for an explanation of this condition, he conducted a series of experiments in vitro in which he attempted to determine the relative fixing powers of the tissues of the different organs for the alkaloid. The results obtained showed that the brain tissues possessed this power to the greatest degree. He therefore concluded that, while morphin might eventually be destroyed in the organism, its destruction was not the cause for the development of tolerance, but merely a result consequent to its fixation by the tissues. According to his ideas, increased tolerance is to be attributed to an increased power of resistance of the protoplasm to the action of morphin. In the case of the brain, which acquires tolerance comparatively rapidly, it is to be attributed to an increase in power of the lipoids to absorb the drug. In this connection, attention is directed to the fact that Bieberfeld[35] could detect no quantitative changes in the lipoids of the brain of a dog that had acquired a tolerance for ten times the lethal dose of morphin.

DESTRUCTION OF MORPHIN AS CAUSE FOR ESTABLISHMENT OF TOLERANCE

The question of the destruction of morphin in the system as far as its being the sole cause for the establishment of tolerance appears to have been definitely settled by Rübsamen[36] in 1908. In experimenting with rats, he observed that animals of this species which had been immunized to large quantities of the drug, and which could withstand double the lethal dose with impunity, showed at a given moment the presence in their bodies of sufficient morphin to produce toxic effects in animals that had not previously received the drug. He therefore advanced the theory that, in addition to the increased power of the organism to destroy morphin, the cells of the tissues, during the period of increasing tolerance, become less sensitive to the action of the drug. This theory has been accepted in principle and further elaborated by van Egmond[37] and by van Dongen.[38]

26. Kobert, R.: Lehrbuch der Intoxikationen, Stuttgart **2**: 995, 1906.
27. Diederich, Georg: Ueber Oxydimorphine und seine Wirkungen auf den Organismus, Diss., Göttingen, 1883; cited by Kobert, Lehrbuch der Intoxikationen, **2**: 996, 1906.
28. Puschmann, A.: Ueber Oxydimorphin und seine Wirkung auf den tierischen Organismus; Diss., Göttingen, 1895; cited by Kobert, Lehrbuch der Intoxikationen, **2**: 996, 1906.
29. Gioffredi, Carlo: Recherches ultérieures sur l'immunisation pour la morphine, Arch. ital. de biol. **31**: 398-411, 1899.
30. Faust's results are not conclusive evidence of the destruction of morphin in the system as he did not make quantitative determinations of the amount excreted in the urine throughout the course of his experiments. It is possible that the path of elimination changes during the period of increasing tolerance. In fact, considerable support to this view is given by the observations made by von Kaufmann-Asser (Ueber die Ausscheidung des Morphins im Harn, Biochem. Ztschr. **54**: 161-173, 1913). The latter found that rabbits excreted in the urine from 3 to 23 per cent. of morphin in acute poisoning, and up to 39 per cent. in chronic poisoning.
31. Albanese, Manfredi: Contributo allo studio del comportamento della morfine negli animali alla sua azione: Influenza degli organi interni sul velino, Arch. farma. sper. **8**: 307-315, 1909.
32. Dorlencourt, H.: Etude sur la destruction in vitro du chlorhydrate de morphine par les organes d'animaux accoutumés et non accoutumés, Compt. rend. Soc. de biol. **74**: 895-897, 1913.
33. Babel, A.: Ueber das Verhalten des Morphiums und seiner Derivate im Tierkörper, Arch. f. exper. Path. u. Pharmakol. **52**: 262-270, 1904.
34. Langer, Hans: Ueber Heroinausscheidung und -gewöhnung, Biochem. Ztschr. **45**: 221-238, 1912.
35. Bieberfeld, Johannes: Ueber die Mengenverhältnisse der Hirnlipoide morphingewöhnter Hunde, Biochem. Ztschr. **70**: 158-163, 1915.
36. Rübsamen, W.: Experimentelle Untersuchungen über die Gewöhnung an Morphin, Arch. f. exper. Path. u. Pharmakol. **59**: 227-244, 1908.
37. Van Egmond, A. A. J.: Ueber die Wirkung des Morphins auf das Herz (zugleich ein Beitrag zur Frage der Morphingewöhnung), Arch. f. exper. Path. u. Pharmakol. **65**: 197-213, 1911.
38. Van Dongen, K.: Beiträge zur Frage der Morphingewöhnung, Arch. f. d. ges. Physiol. **162**: 54-66, 1915.

Van Egmond in his experiments (1911) demonstrated that the responsiveness of the vagus center to morphin remains unaltered. In tolerant dogs in which the brain cortex and vomiting center failed to respond to 100 times the initially active dose (0.23 gm. per kilogram of body weight), the vagus center showed the effects of minute doses (0.04 mg. per kilogram of body weight) of morphin as long as several hours after its administration. Van Dongen, in 1915, found that it was possible to accustom the respiratory center to morphin in quantities as large as 1,800 times the initial dose to which the breathing function was responsive, and that the nervous centers governing the dilatation of the pupils were also immunized to the action of the drug in dogs habituated to its use. Other centers did not appear to be so easily affected.[39] The gastric manifestations, for instance, were not so readily dispelled by the development of a general tolerance. Furthermore, the time within which these centers lose their sensitiveness does not correspond with their comparative sensitiveness to the drug before tolerance is established. Van Egmond states that his observations compel him to accept the theory of Rübsamen in preference to that of Faust as more nearly approaching the truth, while van Dongen concludes that we must further postulate a specific tissue immunity in which the different organs and centers acquire immunity with a varied readiness and to an unequal degree.

ANALOGY BETWEEN IMMUNITY BY VACCINES AND THAT OF OPIUM

An explanation of an entirely different character has resulted from the researches of another group of laboratory workers. These investigators have attempted to show an analogy between the immunity produced by bacterial vaccines and that of opium or its alkaloids. As pioneer work along this line should be mentioned that of Gioffredi[40] reported in 1897.

Gioffredi prepared a serum from dogs that had become tolerant to large doses of morphin, and found that, when this serum was injected into kittens, it protected them against the fatal effects of from two to two and one-half times the minimum lethal dose. From this, he concluded that an antitoxic substance ("antimorphin") was formed in the blood of tolerant animals and that this neutralized the effects of the morphin. Results pointing to a similar conclusion were obtained by Hirschlaff,[41] von Marikovszky[42] and by Berri and Belgrano.[43]

In 1902, Hirschlaff reported that he had prepared a serum from rabbits that had acquired a tolerance for relatively large doses of morphin, and that this serum, when injected into mice, protected them against three or four times the minimum lethal dose of the drug.

Von Marikovszky (1907) found that, when from 0.035 to 0.049 grain of morphin detoxicated with progressively diminishing amount of potassium permanganate was administered every three days to rabbits, these animals acquired a high degree of tolerance. A serum prepared from these tolerant animals is stated to have retarded and, in some cases, to have prevented death when injected with or immediately following an otherwise fatal dose of the alkaloid.

Berri and Belgrano (1912) induced tolerance in a somewhat different manner. They injected rabbits repeatedly with an "aggressin-like" centrifugal pleural exudate produced by morphin and aleuronate. A serum prepared from these animals is also reported to have possessed immunizing properties, and probably antiaggressin properties as well.

An opinion favoring a theory of this nature has also been arrived at by Bishop (1913) and others through clinical observations. On the other hand, the animal experiments of Morgenroth (1903), Cloetta (1903) and Mirto[44] (1905) all show concordantly negative results with respect to the demonstration of an antibody in chronic experimental morphin poisoning.

The contradictory character of the results obtained by the foregoing investigators tends to place a negative value on any theory in which it is necessary to assume the direct action of an antibody. Nevertheless, there appear to be good reasons for the belief in some form of serum immunity—perhaps of the second order as described by Ehrlich. For example, Ferrai[45] (1909) demonstrated that morphin differs from most other alkaloids in that it possesses an anticomplementary power. He observed that morphin hydrochlorid, sulphate or acetate hindered hemolysis in the hemolytic system, guinea-pig complement plus rabbit immune amboceptor acting on sheep's blood plus the erythrocytes of sheep's blood.

TOXIN THEORY OF PETTEY

Still another theory differing in character from any of the foregoing has been brought forward by Pettey[46] (1913). As a result of clinical studies, he arrived at the conclusion that the repeated use of opium or its alkaloids gives rise to the formation of toxins (of autogenous and intestinal origin) which act as irritants to the nerve tissues, and that increasingly large amounts of morphin are necessary to counteract the effect produced. This explanation is concurred in by Wholey (1912), who states that he believes increased tolerance, in part at least, is due to the fact that the nerve cells become exhausted from continued reaction and the accumulation of waste products, and for these reasons require an increased dosage to bring about an adequate effect.

WITHDRAWAL PHENOMENA

Important as these theories may be for an understanding of the altered physiologic conditions produced during the course of tolerance, the majority of them offer no explanation for the additional feature that must be taken into account in practice, namely, the abstinence phenomena that manifest themselves when the drug is withdrawn. These symptoms are not merely of a negative nature, but are of the positive kind described in the fore part of this paper.

It will be recalled that Marmé assigned as a cause for the appearance of the abstinence symptoms the

39. Langer (1912) observed, in the case of heroin, that the acquired tolerance of dogs to its narcotic action did not extend to its convulsive effects.

40. Gioffredi, Carlo: L'immunité artificielle par les alcaloides, Arch. ital. de biol. **28**: 402-407, 1897.

41. Hirschlaff, Leo: Ein Heilserum zur Bekämpfung der Morphinsucht und ähnlicher Intoxikationen, Berl. klin. Wchnschr. **39**: 1149-1152 and 1174-1177, 1902.

42. Von Marikovszky, Georg: Immunisierungs- und serotherapeutische Versuche dem Morphium gegenüber, Zentralbl. f. Bakteriol. u. Parasitenk. **43**: 494-507, 1907.

43. Berri, G., and Belgrano, C.: Aggressine rispetto alla cocaina el alla morfina, Ztschr. f. Immunitätsforsch. u. exper. Therap. **5**: Part 2, pp. 1149-1150, 1912.

44. Mirto, Domenico: Sul significato della siero-reazione precipitante nell' assuefazione alla morfina e sul valore come mezzo di reconoscimento della morfina, Arch. farma, sper. **4**: 406-418, 1905.

45. Ferrai, Carlo: Sul potere anticomplementare della morfina, Pathologica **9**: 505-511, 1909.

46. Pettey, G. E.: The Narcotic Drug Diseases and Allied Ailments, Philadelphia, 1913, p. 13.

physiologic action of oxydimorphin. This substance, he contended, was formed from morphin in the body and required the administration of additional amounts of the latter to counteract the effects that it produced. His theory, however, is held to be untenable for reasons already presented. That, however, these phenomena are due to the formation of some unidentified toxic substance in the body appears to be highly probable in the light of the comparatively recent discoveries of Valenti.[47]

In 1914, Valenti found that, when the administration of morphin was stopped in the case of dogs after a period of developing immunity, marked circulatory disturbances made their appearance. These consisted of increased frequency of the pulse, severe arrhythmias, and arterial hypotension. These promptly disappeared if morphin was again administered in quantities sufficient to produce the so-called morphin pulse. When the serum of these dogs, taken during the abstinence period, was injected into normal animals of the same species, the foregoing syndrome was promptly produced. This was demonstrated not to be due to the toxic properties of the serum as such, since no evil effects were observed when the serum from unmorphinized dogs was employed.

While the identity of this toxic substance has not been established to date, it is not in keeping with our present theories of immunity to pronounce it an antitoxin. In no disease in which antitoxin formation has been demonstrated have there been observed untoward symptoms that could be attributed to the action of the antitoxin. Although aware of these facts, Bishop still persists in the opinion that this substance is an antibody which also possesses toxic properties. His theory in explanation of increased tolerance and the appearance of the withdrawal phenomena is based on this belief and is supported by logical deductions made from a clinical study of numerous so-called addicts.

A theory also based on the assumption that toxins are responsible for the symptoms produced was brought forward by Pettey in 1913. He contends that the withdrawal phenomena are the result of the saturation of the system with toxins of intestinal and autogenous origin. So long as the drug is taken in the required amount at regular intervals, the nerve centers are kept benumbed so that they do not respond to the irritating action of the accumulated toxins; but when administration is discontinued, the characteristic symptoms immediately manifest themselves.

An explanation somewhat similar in type was advanced by Kunkel[48] in 1901. He assumed that the cells of the various organs were spurred to greater efforts under the continuous effects of repeated doses of morphin, and that when the depressing action of the drug was removed through the discontinuance of its use, a hypernormal activity resulted. In his opinion, the withdrawal symptoms are merely the outward manifestations of this increase in activity.

CONCLUSION

From the foregoing review of the literature, it becomes apparent that, up to the present time, all investigators have failed to demonstrate the exact nature of the factors that enable the system, in the case of either animals or human beings, to tolerate enormous doses of these drugs or to identify the substances that give rise to the withdrawal phenomena. The only knowledge of a positive nature that we really have at present concerning these problems is that the different organs and centers of the body acquire tolerance to morphin and heroin to a different degree and with varied degrees of readiness; that these drugs as such are excreted in the feces in diminishing amounts during the period of acquiring tolerance; and that there is evidently present in the blood serum of tolerant animals (dogs) during periods of abstinence a substance or substances which, when injected into normal animals of the same species, causes the appearance of symptoms identical with the so-called withdrawal phenomena. Whether or not the disappearance of these drugs from the feces is due to their increased destruction in the organism is still an unsettled question. Attempts to solve this problem through a chemical examination of the excretions have led only to confusion, the literature being replete with contradictory results. Furthermore, it has not been proved that the destruction of morphin in the organism, if it does take place to an increased degree, is a causative factor in the production of tolerance. As stated before, it may be only a concomitant phenomenon.

47. Valenti, Adriano: Experimentelle Untersuchungen über den chronischen Morphinismus; Kreislaufstörungen hervorgerufen durch das Serum morphinistischer Tiere in der Abstinenzperiode, Arch. f. exper. Path. u. Pharmakol. **75**: 437-462, 1914.

48. Kunkel, A. J.: Handbuch der Toxikologie, Jena **1**, Part 2, pp. 815-826, 1901.

TORSION OF AN ENLARGED HYDATID OF MORGAGNI

AS THE CAUSE OF ACUTE ABDOMINAL DISTURBANCE *

CHESTER H. WATERS, M.D.
OMAHA

The occurrence of a small cyst with a stringlike pedicle, having its attachment to the lower margin of the fimbriated extremity of the fallopian tube, is frequently observed. These are generally considered as derived from some persistent remnant of the wolffian body or its duct, and their presence has little pathologic or other significance.

As a perusal of the available literature has been most unfruitful in bringing to light evidence of their possible pathologic importance, an instance that recently came under my observation may be of interest in showing that a cyst of this character, by virtue of its long, attenuated pedicle, may be subjected to torsion and give rise to acute abdominal disturbance of unusual severity.

REPORT OF CASE

History.—Miss E., aged 18, domestic, who first consulted me, Feb. 5, 1918, on the preceding day had been rather abruptly seized with cramping pains in the lower abdomen, especially on the left side. Accompanying the pain there was unusually severe and repeated vomiting and extreme prostration.

Examination.—The temperature was 101, the pulse, 130. The abdomen was rounded, moderately tympanitic with tenderness on pressure, most marked in the left hypogastric region. There were spasm and moderate rigidity of the rectus on this side. Rectal examination was negative, except that tenderness was elicited high up on the left side. A leukocytosis of 16,800 with a polymorphonuclear percentage of 86 was found. Urinalysis was negative.

* From the Surgical and Pathological Departments of the University of Nebraska College of Medicine.

Diagnosis.—The past history did not furnish much enlightenment and was rather confusing. The patient had never been rugged since puberty, and menstruation had always been extremely painful and profuse. During the preceding nine months the interval had been reduced from four to three weeks, and the dysmenorrhea exaggerated. The onset of the irregularity followed an attack similar to the present one, and was definitely caused by falling heavily when attempting to jump over a ditch. Since then, at intervals of two or three months, similar though milder attacks had occurred, lasting only a few days.

She denied the possibility of venereal infection, and this assertion was substantiated by the presence of an intact hymen. In view of the pronounced gastric manifestations, the fever and rapidity of the pulse, together with the fairly well localized pain and associated muscular spasm and rigidity, the possibility of involvement of a left sided appendix was entertained.

Torsion, rupture or hemorrhage from or into an ovarian cyst were also considered as possible diagnoses.

Course.—As the diagnosis was in doubt, the rather hazardous course of temporization under close observation was decided on. During the following five days the temperature ranged from 99 to 100, while the pulse rate remained rather consistently around 100. Some nausea persisted, as did an area of localized tenderness of some intensity in the left hypogastrium. As there was no appreciable improvement in the symptoms, operation was decided on.

Operation and Result.—February 11, a median laparatomy incision was made below the umbilicus. A small amount of blood-tinged serous fluid was found in the pelvis. At the outer extremity of the left tube a large hydatid of Morgagni was discovered which approximated, in size and shape, a large olive. It was purplish black and had a pedicle 1½ inches long. A twist of one complete turn was noted in this when the structure was elevated, but it may be assumed that a greater degree of torsion may have existed and that partial unwinding had occurred spontaneously or as a result of exploratory manipulation in the pelvis. The cyst was quite tense, and over its surface were numerous engorged veins. The pedicle was ligated and the cyst removed. Both ovaries were found enlarged, owing to numerous atretic follicles. Both ovaries were partially resected, and an appendix, in the usual situation and otherwise normal, was removed. The abdominal cavity was carefully explored and no other pathologic condition found. The operation was completed with a dilatation of the cervix. Convalescence was uneventful. Subsequent menses have been regular and practically without discomfort. The patient's general health improved markedly, and she gained 10 pounds in five weeks. The cyst was oval, dark purple, and measured 2.5 by 2 cm. The remnant of its pedicle was 2.5 cm. long.

CONCLUSION

I simply wish to add torsion of the pedicle of an enlarged hydatid of Morgagni, which is an otherwise harmless structure, to the list of unusual causes of acute abdominal disturbance occurring in the female.

Feeblemindedness.—The report of the Kansas Commission on Provision for the Feebleminded, dated Jan. 1, 1919, says that, based on the lowest conservative estimate, there are 7,500 feebleminded persons in Kansas, and less than one tenth of them are cared for at the institution at Winfield. It is also estimated that there are at least 1,500 feebleminded children in the public schools of the state, where they are not receiving the type of training that will fit them to be partly self-supporting. It is recommended that the way to stop the increase of the feebleminded is to transfer them to the custodial care of the state before they reach the age of adolescence, and also to place the feebleminded men and women of the state in colonies especially provided for their care. The report contains discussions of various aspects of the problem of the feebleminded, and offers a program for handling it.

Clinical Notes, Suggestions, and New Instruments

REPORT OF AN UNUSUAL CASE OF BACTEREMIA

H. H. CHAMBERLIN, M.D. (GLENDORA, CALIF.), AND A. J. MINAKER, M.D.
Lieutenants, M. C., U. S. N. R. F.
SAN FRANCISCO

A. J. L., aged 18, who had a neurotic temperament, reported, Sept. 14, 1918, complaining of vertigo when up and about. The previous personal and family history was negative. Examination disclosed a slightly enlarged spleen and prolonged expiration over a small area under the right clavicle. The temperature was 104 F., the pulse 108, and the white blood count 23,000. There were 85 per cent. polymorphonuclears. No plasmodia were found in the blood, and the blood culture was sterile.

During the first two weeks the temperature ran a very irregular course, ranging from 97 to 104 F., without sweats. Typhoid fever, malaria and tuberculosis were eliminated, as the possible underlying conditions by appropriate clinical and laboratory findings. Two blood cultures made during this period produced no growth.

A blood culture, September 29, produced a gram-negative diplococcus, which was plated on eosin brilliant green, blood agar, nutrient agar and litmus lactose agar. No growth developed on any of these mediums except the blood agar, which produced an abundant growth of pure gram-negative diplococci. These organisms varied in size, shape and staining characteristics. Fifty c.c. of antimeningococcic serum were administered intravenously at this time.

TITRATION AGAINST DILUTED SERUMS

	Dilutions			
	1:50	1:100	1:200	1:400
Patient's blood	+++	+++	++	+
Rockefeller polyvalent	++	++	+	—
Rockefeller regular type	+	—	—	—
Rockefeller para type	++	++	+	+

By the Krumwiede method of slide agglutination, a pronounced clumping occurred with the Rockefeller polyvalent serum. This clumping occurred in gradually diminishing intensity as the culture was attenuated by subculturing.

Subcultures were made on plates with these results: nutrient agar, —; serum glucose, + (with slight acidification); serum maltose agar, +; serum levulose agar, —; blood agar, +. There was no growth on plates of various mediums left at ordinary room temperature. Andrade's indicator was used for determining acidification in the serum agar tubes.

An emulsion of the growth from the serum agar was standardized at about 5 billion to the cubic centimeter. This was titrated against diluted serums as shown in the accompanying table.

October 2, the patient developed an exaggerated knee jerk, and ankle and patellar clonus. Kernig and Babinski reactions were absent. The temperature was 103 F., the pulse 136, and the respiration 19. Twenty c.c. of spinal fluid were withdrawn and 30 c.c. of antimeningococcic serum were injected into the spinal canal. The fluid withdrawn was sterile, the cell count was 20 per cubic centimeter, and the globulin test was negative. For two days the condition of the patient was much improved.

During the next ten days about 300 c.c. of various makes of antimeningococcic serum were given into the veins, muscles and spinal canal, none of which produced the slightest benefit. The temperature ranged from 97 to 103.4 F., and the pulse remained above 110.

October 16, a blood culture was sterile, and 0.3 c.c. of an autogenous vaccine, containing about 1 billion organisms to the cubic centimeter, was given intramuscularly. This was followed by a slight reaction and reduction of the temperature. The vaccine was repeated at forty-eight hour

intervals, the dosage being rapidly increased up to 1.25 c.c. This was reduced to 1 c.c. and was continued up to November 4. The temperature remained normal after October 31. There was a remarkable absence of subjective symptoms throughout the course of the disease. Vertigo was the only symptom complained of and it was with difficulty that the patient was kept in bed.

Convalescence was uneventful and rapid, though the pulse remained above normal up to the last of December.

SUMMARY

The interesting features of the case are: (1) The absence of subjective symptoms; (2) the presence in the blood stream of an organism of this type without production of more pronounced meningeal symptoms; (3) the slight reaction of the organism on the carbohydrates, its irregular agglutination reactions, and the absence of its specific antibody in all of the serums employed, and (4) the prompt reaction of the patient to the autogenous vaccine.

The conclusion reached by us and concurred in by Dr. K. F. Meyer of the Hooper Foundation, San Francisco, was that the infecting organism was a parameningococcus.

COLORIMETRIC STANDARDIZATION OF THE CELL SUSPENSION IN THE WASSERMANN REACTION

Rawson J. Pickard, M.D., San Diego, Calif.

Of the five factors entering into a complement fixation reaction, such as the Wassermann, one of the most important to standardize is the amount of cells to be hemolyzed. On this quantity, the erythrocytic mass, is based the amount of hemolytic amboceptor to be used, and from these the quantity of complement is derived by titration. The preliminary titration of the amboceptor-complement balance required for hemolysis determines the quantity of complement which may be fixed by an antibody contained in the serum used in the main test. Variations, therefore, in the quantity of cells to be hemolyzed directly affect the diagnostic value of the fixation reaction.

This is not true of a "loose system" when only strong positives are sought, in which many units of both complement and of amboceptor prevent the possibility of fixation from anything less than an overwhelming amount of antibody. In such tests delicacy in the preliminary titrations can be greatly diminished.

At present there is a source of confusion in that many laboratories are using as controls, or even substituting for the Wassermann reaction, various modifications of the test which are not only more sensitive to complement fixing bodies but also do not use the same proportions of the different factors, and in using different factors give results not wholly comparable to the Wassermann, the basis of diagnosis being altered. It is time that efforts were directed toward standardizing the reaction or such elements of it as can be standardized, for one reason, in order to allow definite comparison of the ever multiplying modifications.

The hemolytic system used, whether sheep, ox, human or chicken, is important only as it affects amboceptor, for the amount of cells and of complement is readily made the same for different workers. An amboceptor of less than 1:1,000 titer is in danger of giving complement fixation from agglutinin reactions, and an erythrocyte to be usable must not only be accessible when wanted but capable of producing a high titer hemolytic amboceptor in an available animal. The use of cell suspensions of 1, 2.5, 3.5 or 10 per cent. in different technics makes ultimately for a different standard of antibody content in the serum to be tested for the diagnostic amount of fixation, unless the amount of cell suspension used gives the same proportion of cells to the whole volume of the main test. The original standard of one-fifth volume of 5 per cent. cells makes 1 per cent. cells in the total volume, and should be adhered to.

The cell suspension is usually estimated from the quantity of sediment in the centrifuge tube after the last washing. This procedure is not the best for several reasons: The arm length of the centrifuge, its speed and the time of centrifugation should all be accurately measured. Inaccuracies in the lower graduations of the centrifuge tube are common. The reading of the mass of sediment is a question of judgment unless it happens level with a marking. Sometimes even after repeated washings there is a little sediment adherent to the tube. The saline solutions in different laboratories vary between 0.8 and 0.9 per cent. Altogether there are too many details to be left to the average technician.

In the Sahli hemoglobinometer is furnished a method for obtaining a cell suspension everywhere of the same strength. The instrument is in every laboratory, readings are quickly made, and the percentage of error is far less than in the estimation from sediment. The complement will be found to titrate more evenly. Of a 5 per cent. suspension of sheep cells properly centrifugated, 0.2 c.c. will give a reading of 75 in the Sahli hemoglobinometer. With this method the suspension need not be wholly thrown down after the last washing (4-5); a reading can be made with the hemoglobinometer, and the final dilution may be estimated and made quickly and accurately, and in all laboratories of the same strength.

COINCIDENTAL ACUTE PERFORATION OF A DUODENAL ULCER, AND BLOCKING OF THE CYSTIC DUCT BY STONE, WITH ACUTE CHOLECYSTITIS

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Associate in Surgery, Northwestern University Medical School

An acute free perforation of a duodenal ulcer presents a picture that should seldom confuse it with the more common of the abdominal lesions. The sudden and usually terrific onslaught of pain which drops the patient as though shot, the bilateral boardlike rigidity, and the complete physical collapse that accompany the accident, usually serve clearly to define its nature.

Obviously, the chief concern of the surgeon in the case of the acute abdomen is to decide the necessity for surgical intervention. This done, a differential diagnosis should, if possible, be made. In the case I wish to report, the interest centers about two interesting conditions: First, there were two coincidental acute lesions, both in the upper abdomen; second, the clinical picture suggested neither of the two lesions.

REPORT OF CASE

History.—Mrs. P., aged 29, who entered Wesley Memorial Hospital, September 21, 1918, referred by Dr. J. G. Campbell, began first to feel sick shortly after noon, September 19. Previous to this time she felt "perfectly well." As the afternoon progressed, the vague feeling of illness defined itself as a diffuse abdominal discomfort which progressed in severity, keeping her awake until midnight, after which she slept at intervals.

On the following morning, feeling somewhat relieved, she was able to be about. Late in the afternoon a rapid increase in the severity of the pain compelled her to go to bed. Attempting to eat supper, she vomited for the first time since the onset of symptoms, thirty hours previous. During the night, the pain shifted to the right side, and became so severe that at 4 a. m. her physician was called in. A possible history of previous abdominal disturbances was minutely investigated, and proved negative.

Examination.—The patient was first seen by me forty-eight hours after the onset of symptoms. Her general condition was good. There was no evidence of shock. She was suffering what evidently was an easily endurable abdominal pain. There was marked rigidity over the entire right rectus; the appendical area was very tender. There was moderate tenderness over the gallbladder region and in the midline just below the ensiform. The left rectus was moderately rigid. At this time the leukocyte count was 16,000; polymorphonuclears, 88 per cent. The temperature was 100; the pulse was 100.

The onset and manner of development of the symptoms suggested an acute appendicitis of approximately forty-eight hours' duration, that during the past twelve hours was giving

rise to a diffuse spreading peritonitis. A laparotomy was immediately performed.

Operation.—A muscle-splitting incision revealed a large quantity of mucopurulent exudate, a marked peritonitis, and an appendix very evidently not the source of the trouble. The tip of a tensely distended gallbladder was palpable just above the upper end of the incision, which was promptly closed and an upper rectus incision made. This revealed a gallbladder 7 inches long, tensely distended, and covered by a thick, fibrinous exudate. There was neither perforation nor gangrene present. This also seemed unlikely as the cause of so widespread a peritonitis, and so the stomach was explored. There was found a punctate perforation of an old callous ulcer, just distal to the pylorus. Mucus was poring from the perforation.

The perforation was closed by infolding first with catgut and then with silk. A posterior gastrojejunostomy was performed, and following this, acholecystectomy.

Section of the gallbladder revealed a single calcium stone, one-half inch in diameter, in the entrance to the cystic duct, which was completely blocked by inflammatory edema. The gallbladder was filled with a thick, tarry bile, and its walls showed a chronic fibrous thickening, on which was superimposed the acute process, brought on, doubtless by movement of the stone.

Postoperative Course.—The abdomen was closed without any drainage whatsoever. The postoperative temperature ranged from 99 to 101 the first two days, and went to 102.4 on the third day; from the fourth day on it remained normal. The patient left the hospital on the fourteenth day, eating and enjoying solid food. There was no wound infection.

COMMENT

In passing, I wish briefly to comment on the treatment used. In the presence of a general peritonitis, and following a cholecystectomy, the abdomen was closed without drainage.

For the past four years at Richter's Clinic at Wesley Memorial Hospital, we have drained no abdomen following cholecystectomy when exploration of the common duct was not made. Cases of empyema and gangrene are excepted. We feel that the peritoneum is able amply to take care of the slight soiling that the stump may cause. So far, our practice has fully been justified. This I consider one of the important recent advances in the technic of gallbladder surgery.

Lastly, it is of paramount importance to differentiate the peritonitis that follows a duodenal perforation and that which follows a virulent bacterial invasion from a lower portion of the intestinal tract. The contents of the duodenum are practically sterile. The widespread peritonitis that follows free perforation is due to the acidity of these contents, and is a chemical peritonitis. The ulcer once closed, excepting in those cases already exhausted from prolonged toxic absorption, the peritoneum will take care of the remainder of the exudate. Foreign material introduced for the purpose of drainage introduces infection, and by contact with the site of recent perforation often causes a fistulous opening. Drainage following duodenal perforation is undoubtedly one of the important causes of the high mortality rate.

A SIMPLE METHOD FOR THE DEFIBRINATION OF BLOOD

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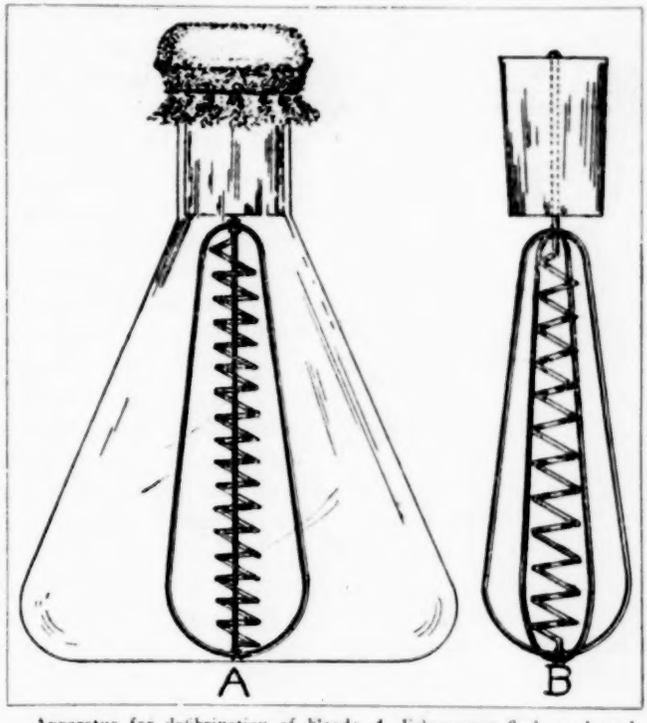
The great demand, the frequent loss, and the inability to readily procure suitable beads for the defibrination of blood has prompted the designing of this simple apparatus, which has given excellent results, and which may be of interest and value to those engaged in the class of work necessitating such treatment of blood.

The apparatus consists of an ordinary Erlenmeyer flask (*A*) with a cork to fit, and a piece of looped wire, preferably copper, as copper will not rust and is readily cleaned.

The wire (*B*) may be bent into simple loops or, as set forth in the drawing, may be arranged as an elongated spiral with the two outer loops connected therewith at the top and bottom, the spiral being in the center. This tends to impart more or less rigidity to the structure and, the wire being flexible, is easily introduced into the flask. The upper process of wire extends through the cork and is fastened on the upper side.



Apparatus for defibrination of blood: *A*, Erlenmeyer flask, cork and wire complete; *B*, cork and wire.

When it is desired to procure blood aseptically, the stopper may have a glass tube introduced between the center and edge, and a plug to fit.

When the desired quantity of blood is procured, the flask is grasped by the neck, the stopper toward the palm of the hand, and defibrination accomplished by a vigorous motion not unlike ringing a bell.

After sufficient shaking, the wire is removed by withdrawing the stopper, and the fibrin will be found closely adhered to the mesh, leaving the defrinated blood within the flask.

1608 Q Street N.W.

Sickness in Relation to Family Income.—Sydenstricker, Wheeler and Goldberger of the Public Health Service made an investigation into disabling sickness among the population of seven cotton mill villages of South Carolina in relation to family income during May and June, 1916. The study covered 747 households composed of 4,161 persons. They conclude (*Public Health Reports*, Nov. 22, 1918): A higher sickness (involving inability to work) rate and a greater amount of working time lost on account of such sickness were found among members of families whose incomes were low than among members of families with a more favorable economic status. Only when a family income approximated $10 per half month per adult male unit (or about $900 a year for a family of "normal" size in 1916) did the sickness rate appear to be as low as that suggested by similar censuses in a number of localities in the United States as the normal rate. Low economic status appeared to be a more striking concomitant of high sickness rate among females than employment in mill work. A greater proportion of disabling illness, of relatively long duration, appeared among persons whose family income was below the average than among persons with a more favorable economic status. In the analysis of morbidity facts economic status should be given proper emphasis.

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SATURDAY, APRIL 12, 1919

"THE NEEDS OF MEDICAL EDUCATION AS REVEALED BY THE WAR"

When the United States entered the great war, the Medical Corps of the Army consisted of less than 450 regular medical officers. When the armistice was signed this body had expanded to more than 32,000 officers; practically all of the increase represented volunteers from the medical profession in civilian life. The views of one of the regular medical officers regarding the great body of civilian physicians with which he came in contact on their entrance into military service appear in this issue.[1] General Munson gives his estimate of the professional qualifications of the medical men from civilian life, as seen and studied in the medical officers' training camps. He indicates that the civilian physicians entering the Army were a selected group and therefore their qualifications averaged higher than the general average of civilian physicians.

Along with General Munson's paper we are also publishing a letter[2] and a reply bearing on the same subject. In his letter Dr. Vaughan asks General Munson for an estimate of the professional qualifications of the Reserve Corps men who entered the service without passing through the medical officers' training camps. Unfortunately, the reply does not contain the information. Altogether, the number of these must have been large. For example, there were (*a*) nearly 1,000 recently graduated men, who represent the latest productions of the best medical schools, and who were sent to the British army during the summer of 1917; (*b*) the personnel of the Red Cross hospitals, who either in the early summer of 1917 or later, went directly to France; (*c*) the large number of casual medical officers who went directly overseas in 1917 or later; (*d*) the large number of reserve officers in various base hospital units in this country, some of which were later sent to France while others remained in the United States, and (*e*) the medical officers in the National Guard divisions.

1. Munson, E. L.: The Needs of Medical Education as Revealed by the War, this issue, p. 1050.

2. Needs of Medical Education as Revealed by the War, Correspondence, this issue, p. 1095.

In his reply, General Munson does, however, make two statements which appear to be fundamental, namely: (*a*) "The general qualifications of the great majority of the medical men entering the services were good," and (*b*) "the examinations [referred to in General Munson's paper] were conducted . . . on a wholly insignificant number of new officers."

These statements should be carefully considered by the reader in connection with General Munson's article, since they are important to any one who attempts to judge the best product of our best medical schools with their modern equipment and methods of instruction. All medical educators will agree with General Munson that perfection in medical teaching has not been reached. Nevertheless all must agree that admission to our better medical schools is now effectively safeguarded; thus preventing at the source the entrance of uneducated men. As a result of the campaign conducted by the American Medical Association, during the last fifteen years, through its Council on Medical Education, aided by the leading medical educators in this country, the requirements for admission to the medical schools of the United States have been greatly advanced, and medical education has been greatly improved in other respects.

General Munson suggests that the Army psychologic tests be applied to those seeking admission to medical schools, and states that these tests are now "employed in the hiring of artisans, clerks, etc." Even though medical officers fell below others in these alleged reliable tests of mental alertness, the training and methods of thought of physicians tend to carefully considered judgment rather than to the quickness of eye or finger that is demanded of the typesetter or artisan. It must be borne in mind that students are not now admitted to our better medical schools unless they have had a preliminary training equivalent to the training received in the first two years of a college course. They are hardly to be compared with artisans and clerks. There is no question as to the intelligence of these students when they enter the medical schools. There are, however, other essentials besides intelligence for those who would make a success in the practice of medicine and be an honor to the profession. The second essential is industry, and this can be tested out only under at least one semester of strenuous trial. Even then there is no method known by which it can be determined to what extent industry on the part of the individual will be employed in subsequent life. The third essential to an honorable position in the practice of medicine is integrity. This qualification can be determined only after close association extending through a comparatively long period.

There are men in all grades of life and in all professions who will not be industrious except when under immediate stimulation and direction. Failure to continue the industrious pursuit of scientific medicine

is the cause of the greater number of lapses of those who during the past ten years have gone out from our medical schools. With this in view, the recommendation made by General Munson in his letter that physicians be encouraged to keep up with medical progress is of the greatest importance and deserves consideration from all who are concerned in medical education.

No apology is needed concerning the actual work and results achieved by these volunteer medical officers. They kept the medical quota more than filled without being materially stimulated by the draft. General Crowder has testified not only to the civilian physician's patriotism but also to his efficiency on the more than four thousand draft boards, and he also has disposed of the myths about men with glass eyes and cork legs being accepted for the service by medical men.

Nearly 35,000 physicians donned the khaki and blue of the Army and Navy. We venture the statement, although we have no exact figures on this point, that the volunteer medical officers rendered at least 95 per cent. of the medical service received by our soldiers in hospitals, in camps and in the field, both in this country and in France. We say these things, not boastfully, but truthfully. The medical profession did its full duty—and did it well.

GREEN FOODS AND VITAMINS

The importance of those as yet little understood food factors popularly termed vitamins has become well established in the minds of persons who discuss dietetics from a scientific standpoint. Owing to the historical development, we presume, of our knowledge of the subject, milk and its products have heretofore furnished the chief topic of discussion in relation to vitamins. Thus it is now understood that the secretion of the mammary gland includes, in addition to such excellent nutrients as proteins, fats, sugar, salts of lime and other elements, constituents that promote nutrition and growth and, if properly conserved, suffice to avert scurvy in those individuals that depend on milk as the sole or preponderating source of their nourishment. Dietary analysis, as it is now practiced through actual feeding trials by investigators of nutrition, has assumed the existence of several types of vitamins in milk: the water-soluble, the fat-soluble, and the antiscorbutic vitamins, if they may provisionally be so designated. The lack of any of these "properties" or "potencies" in a dietary during a long period is likely to lead to characteristic pathologic conditions—deficiency diseases, as they have lately been designated. Scurvy, beriberi and pellagra have already been interpreted from this etiologic standpoint.

Fortunately, the vitamins are by no means confined in their occurrence to milk and eggs. They are found widely distributed in different types of food products from animal and vegetable sources, as has been pointed out from time to time in these columns.[1] The demonstration of the existence of antineuritic vitamin in certain parts of the widely used cereals, and the loss of this essential constituent as the result of high milling, have attracted attention to the significance of methods of manipulation in the preparation of foods for human consumption.[2] It has, for example, furnished part of the problem for debate in relation to the relative value of bread made from whole wheat flour or old-fashioned corn meal, in contrast with the modern "white" bread and "highly milled" corn foods.

Although green vegetables have long been popular in the dietary in every part of the world where they are available, the real significance of their inclusion and the almost universal desire for them has been difficult to explain on the basis of the limited conceptions of food values that prevailed a generation ago. Only a few of the vegetables and fruits are especially valuable as "food fuel" or as sources of protein; hence their popularity has primarily been attributed to mineral constituents, the indigestible "roughage" that they afford, and to desired flavor. Latterly, however, a new rôle has been given to many of the vegetables as "protective" foods because of the demonstration that, like milk, they are carriers of indispensable vitamins. Carrots, cabbage, spinach, tomatoes, etc., are thus brought into a new prominence. What is evidently needed in the immediate future for the development of rational dietetics is a widespread survey of the occurrence and distribution of the vitamins in all types of food products that enter into use in the nutrition of both man and the domestic animals on which he is so largely dependent. It is precisely through such laborious studies, in which American physiologists have been conspicuous pioneers, that the danger of identifying certain butter substitutes with butter has been averted and that the necessity of thinking of foods in terms other than calories alone has been emphasized.

What is involved in this newer knowledge may be illustrated by a recent statement of Osborne and Mendel[3] in connection with their studies of vitamins in green leaves. They aver that far less dried spinach supplies sufficient water-soluble vitamin to promote normal growth than do whole wheat, soy beans, dried

1. Flavors and Vitamins, Current Comment, J. A. M. A. **63**: 2296 (Dec. 26) 1914; Modern Bread and Deficiency Diseases, ibid. **66**: 1314 (April 22) 1916; What Is a Vitamin? editorial, ibid. **76**: 1470 (May 6) 1916; Dietary Toxicity versus Deficiency, ibid. **67**: 1094 (Oct. 7) 1916; The Resistance of Antineuritic Vitamins to Alkalis and Heat, ibid. **71**: 41 (July 6) 1918; New Observations on Vitamins, ibid. **71**: 566 (Aug. 17) 1918; More Milk for Vitamins, ibid. **71**: 1582 (Nov. 9) 1918; Vitamins and Metabolism, ibid. **71**: 1662 (Nov. 16) 1918.

2. Voegtlin, C.; Lake, G. C., and Myers, C. N.: The Dietary Deficiency of Cereal Foods with Reference to Their Content in "Antineuritic Vitamins," Pub. Health Rep. **33**: 647, 1918. Voegtlin, C., and Myers, C. N.: The Growth-Promoting Properties of Foods Derived from Corn and Wheat, ibid., p. 843; Phosphorus as an Indicator of the "Vitamin" Content of Corn and Wheat Products, ibid., p. 911.

3. Osborne, T. B., and Mendel, L. B.: Vitamins in Green Leaves, Proc. Soc. Exper. Biol. and Med. **16**: 15, 1918.

egg, meat, milk or potatoes. Spinach leaves are much richer in the fat-soluble vitamin than are most of the products used in our ordinary rations. So far as the limited data now available permit deductions of a general nature, it seems, according to Osborne and Mendel,[4] that the green vegetables supply an important addition to the diet of man because the staples, such as cereals, meats, potatoes, fats and sugar, probably furnish too small an amount of either of these vitamins to meet fully the requirements of an adequate dietary. Therefore care should be taken not to reduce greatly the quantity of green vegetables customarily eaten until more is learned about the actual requirements for these food factors and their relative abundance in the commonly used vegetables and green foods. Only then will it be safe to apply the results obtained in the laboratory to attempts to effect economies in the use of these relatively expensive food products. It may be quite possible for a person to omit fruits and vegetables from his diet without running the risk of receiving insufficient starch, sugar and protein. But there is in fruits and vegetables an apparent safeguard to health. Their use has long been fostered by dietary tradition and personal preference; and now it is further justified by the discoveries of science.

THE SYNTHESIS OF HIPPURIC ACID IN THE BODY

In clinical discussions on the composition of the urine, one rarely finds any mention of hippuric acid. Presumably this is due to the fact that even marked variations in the content of this compound are not provocative of pathologic manifestations, as are excretory products like uric acid phosphates or oxalates. Furthermore, no abnormalities of nutrition have been associated directly with exceptional appearances of hippuric acid. Nevertheless, this substance represents the result of a highly important protective reaction on the part of the organism, namely, the conjugation of ingested benzoic acid with glycocoll supplied by the organism to detoxicate an otherwise harmful substance. Even with an ordinary mixed diet that includes fruits and vegetables, as much as 1 gm. of hippuric acid a day may be eliminated in the urine.

It is surely not without interest, therefore, to know the details of the origin of an excretory substance like this, which plays an important part in preventing harm from the damaging products to which the organism is continually exposed. As the result of the classic studies of Bunge and Schmiedeberg in Strassburg, the kidney has been regarded as the sole seat of hippuric acid synthesis. The reaction held a unique position for the reason that almost every other product appearing in the urine is brought ready-made to the kidney for elimination. The original experiments were conducted on carnivora. Subsequently it was maintained by Friedmann and Tachau[1] of Berlin that the synthesis in herbivora (rabbits) occurs not only in different organs but also in a different manner than in the carnivora, with which group man has been classed in respect to this problem.

Some time ago we pointed out that, according to observations of Kingsbury and Bell[2] in this country, in carnivora the liver also may take part in the hippuric acid synthesis. They found a relatively large amount of hippuric acid in the liver of a nephrectomized dog after injection of glycocoll and sodium benzoate. At the Michael Reese Hospital in Chicago, Lackner, Levinson and Morse[3] have investigated the problem in a different way in carnivora. They compared the urinary output of hippuric acid in dogs on diets of constant composition before and after poisoning with hydrazin, a substance that causes profound liver involvement while the kidney cells are left intact.[4] There was a reduction in the output of hippuric acid as soon as the liver became seriously involved. The conclusion seems justified, therefore, that the liver participates in the usual synthesis. This is, as the Chicago investigators remark, well in keeping with what is known of the hepatic in contrast with the renal functions. Other protective conjugations, such as those of the sulphates and the glycuronates, are undoubtedly referable to the liver, if not to other organs. The production of hippuric acid apparently forms no exception to this.

Current Comment

DOES THE HEART RESPOND TO FATIGUE?

The phenomena of fatigue in skeletal muscles have been the subject of numerous experimental investigations. They have clearly demonstrated that a decrease in irritability or responsiveness to stimuli is one of the characteristics that develop. Fatigue products, so-called, seem to be produced or liberated as a result of overexertion. If they are discharged into the circulation, they can reach structures other than those immediately concerned in the contractile responses. Even distant muscles may thus give evidence of decreased efficiency, that is, fatigue; and the sensation of weariness that arises through the fatigue of muscles shows that nerve cells too can become affected. On general principles one would expect the heart also to exhibit manifestations attributable to fatigue in the skeletal muscles. However, it is a familiar physiologic fact that the heart cannot be thrown into tetanus or fatigue, as can an ordinary muscle, by repeated stimulation. This is

4. Osborne, T. B., and Mendel, L. B.: The Vitamins in Green Foods, J. Biol. Chem. **37**: 187, 1919.

1. Friedmann, E., and Tachau, H.: Biochem. Ztschr. **35**: 88, 1911.
2. Kingsbury, F. B., and Bell, E. T.: J. Biol. Chem. **21**: 297, 1915.
3. Lackner, E.; Levinson, A., and Morse, W.: The Rôle of the Liver in Hippuric Acid Synthesis, Biochem. J. **12**: 184, 1918.
4. Wells, H. G.: J. Exper. Med. **10**: 457, 1908. Underhill, F. P., and Kleiner, L. S.: J. Biol. Chem. **1**: 165, 1908.

presumably due to the peculiar property known as the refractory period, during which stimuli reaching the organ are ineffective. Nevertheless, Mendenhall[1] has shown in the pharmacologic laboratory of the Dartmouth Medical School that the heart, like other tissues of the body, is affected by the products of fatigue. Unlike skeletal muscle, its irritability is increased rather than decreased. Moderate fatigue, carried to a point possible of attainment by voluntary efforts, causes a marked rise in the irritability of the heart muscle. Mendenhall suggests the possibility that such increase in irritability has an adaptive purpose; thus, with increased activity of the skeletal muscles, the heart muscle is influenced by the increase in fatigue products in the circulation, and more readily responds to stimulation. Finally, Mendenhall adds, the continuation of the rapid beating of the heart following exercise may in part be explained by its increase of irritability, due to the presence of fatigue products It is also conceivable that continued fatigue, as in overwork, may give rise to cardiac disturbances that are the result of increased irritability of the heart muscle.

THE RELATIVE RETURN IN LAW AND MEDICINE

Some years ago a study was made of the average income of Harvard medical graduates by classes and years of experience. A questionnaire was sent to each graduate for the ten-year period of 1900 to 1910. A large number of the questionnaires were returned, and the following table was compiled:

Year in Practice	Classes									
	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910
First	$866	$787	$541	$362	$625	$502	$350	$533	$425	$1,237
Second	827	1,089	790	995	773	826	588	1,250	874	1,083
Third	1,181	1,539	1,412	1,295	995	1,262	1,353	1,025	1,370	1,578
Fourth	1,505	1,694	1,720	1,566	1,559	1,765	1,963	1,575	1,632	1,835
Fifth	2,027	1,556	1,966	1,981	1,818	2,359	2,347	1,847	2,150	
Sixth	2,341	1,837	2,333	2,277	2,347	2,197	3,202	2,360		
Seventh	2,527	2,161	2,654	2,967	3,043	3,650	3,545			
Eighth	3,003	2,491	3,155	3,043	3,337	4,332				
Ninth	3,560	2,909	3,616	3,604	4,500					
Tenth	3,524	2,963	4,135	4,535						
Eleventh	3,885	3,691	4,604							
Twelfth	4,422	4,130								
Thirteenth	4,680									
Maximum number of men	38	39	29	39	33	26	29	29	25	26

In 1912 the secretary of the Harvard law school sent letters to all of the graduates of that school from 1902 to 1911 inclusive, and as a result of that questionnaire the following table was made:

Year	No. of Replies	Average Earnings	Year	No. of Replies	Average Earnings
First	694	$ 664	Sixth	249	$3,118
Second	609	1,110	Seventh	162	3,909
Third	497	1,645	Eighth	112	4,426
Fourth	411	2,150	Ninth	62	5,321
Fifth	317	2,668	Tenth	40	5,825

These tables should, of course, be studied with the thought in mind that only about one half of those written to responded, and that those who did respond probably represented the more successful members of their respective professions. The tables are instructive since they indicate that the returns from these two most important professions cannot begin to compare in actual cash increment with almost any of the ordinary commercial or trade interests. And yet the practice of either law or medicine includes many advantages which assure that the supply will never be far below the demand.

1. Mendenhall, W. L.: Effect of Fatigue on the Heart and Cardioskeletal Quotient, Am. J. Physiol. **48**: 13, 1919.

A JURY IN DRY HUMOR

A physician in North Carolina sends us a large advertisement of "Paw Paw Tonic," from which we learn—in 24-point black face capitals—that the "tonic" contains "no alcohol." One gathers from the less prominently featured parts of the advertisement that the preparation does, however, contain port wine! This, in a way, prepares one for the newspaper item which the same correspondent sent in forty-eight hours later, detailing the conviction of a Charlotte, N. C., druggist of selling this nonalcoholic "tonic" to young men who, oddly enough, after partaking of it became drunk and disorderly. Counsel for the druggist maintained that if "Paw Paw Tonic" were taken according to directions the medicine would not produce intoxication. But by an unfortunate *faux pas*, the young men failed to follow directions. Thus far the story is commonplace. The unusual feature in the case is the judge's charge to the jury. He instructed these twelve good men and true to decide whether or not a "patent medicine," which when taken in liberal quantities will produce intoxication, is an intoxicating liquor. The jury decided that such a "patent medicine" *is* an intoxicating liquor! Should this common-sense and rather obvious finding of the jury be held by the courts over the country generally, the large business that purveyors of alcoholic "patent medicines" are expecting to develop after July 1, 1919, will fail to materialize.

CHEAP BUT EFFECTIVE ADVERTISING

"I thought that 'Sal Hepatica' was advertised to the medical profession only," writes a correspondent, "at least I have seen advertisements in medical journals and not in newspapers. But questions put to me by some of my nonprofessional friends make me wonder if it is now advertised to the public." There are two ways of advertising a "patent medicine"—the direct and the indirect. The direct method consists in openly purchasing space in newspapers or on billboards to proclaim the virtues of the panacea. This method is expensive, but has in its favor the probability of quicker returns, and the virtue of an avoidance of commercial hypocrisy. The other method is to call the "patent medicine" an "ethical proprietary," advertise it exclusively in medical journals, circularize the medical profession and send sample packages to physicians. The package should contain one full-sized bottle of the nostrum for the physician himself, and a number of small, single-dose packages for the physician to pass on to his patients. The package, of course, must be distinctive in shape and character, and the name of the preparation duly set forth on the label, with a fairly comprehensive list of pathologic conditions for which

the preparation is recommended. It is desirable, also, to have the name blown in the bottle. Disclosure of the formula is entirely unnecessary. There are two advantages in this indirect method. First, cheapness; second, the "patent medicine" goes to the public with the tacit approval of the medical profession. The indirect method takes a little longer to introduce the product, but in the end is just as effective, for enough physicians can always be counted on to act as unpaid agents in its distribution. "Sal Hepatica" is a "patent medicine" advertised by the indirect method.

THE MENACE OF MALARIA

The passing of the winter reminds us that the fly menace and the mosquito pest will soon be with us again. With war time activities almost entirely relegated to the background this season, the people of the United States should take up, with greater vigor than ever before, the great task of eradicating the diseases for which the summer insects are so largely responsible. Foremost stands malaria, which is said to show an incidence of six or seven million cases in this country each year. The difficulties presented are not attributable to ignorance regarding the etiology of the disease or, indeed, to uncertainty regarding the mode of control. Malaria is seven times as prevalent in rural communities as it is in urban centers; hence the large financial outlay involved in essential antimosquito work tends to fall on groups of our population least able to bear the burden. However, it ought to be understood by all parties of our commonwealths that malaria is not only injurious to health but also a business liability. *Public Health Reports*,[1] which has recently disseminated the plea of the United State Public Health Service for renewed vigor in an antimalarial campaign, points out that there is practically no instance known of a white community thriving where malaria seriously prevails. The time for concerted effort has arrived, the possibilities of success have been demonstrated, and the physicians of this country ought to be foremost in the demand for effective preventive measures. We are assured that the Public Health Service will be glad to assist local communities desiring to engage in antimosquito activities. If desired, an experienced sanitary engineer officer will be detailed to advise such communities as to the most practicable measures to be undertaken, and to cooperate in supervising the activities carried on. Requests for such assistance should be made through the state health officer.

1. Public Health Reports, **34**: 543 (March 21) 1919, contains a list of publications relating to malaria and mosquito control.

The New Athletics.—The athletics of today must be remolded and their object clearly defined. Athletics can surely have no better purpose than to develop a robust and healthy boy who, though he may not be an interscholastic champion or sought after by the larger colleges as likely to increase their fame, will nevertheless enter upon his life work with a symmetrical, fully developed body, capable of resisting disease and of enduring physical strain. For such a young man the training camp, the transport and the trench will not contain the threat of death from disease before his grapple with the enemy.—Lieut. D. F. Luby, *Naval Medical Bulletin*, October, 1918.

Association News

THE VICTORY MEETING

Committee on Arrangements Opens Office and Will Aid Hotel Reservations

The Local Committee on Arrangements for the "Victory Meeting"—the 1919 annual session to be held at Atlantic City, N. J., June 9-13—requests that all correspondence addressed to the committee or to its subcommittees should be mailed to 1801 Pacific Avenue, Atlantic City, N. J., the office of the Local Committee on Arrangements. The committee has found that certain of the hotels located on the Boardwalk are already filled for the week of the annual session. There are, however, ample and excellent hotel facilities still available for those attending the Victory Meeting. It is advisable that hotel reservations shall be made in advance of the annual session, and the Subcommittee on Hotels, Dr. David B. Allman, chairman, or the Central Local Committee on Arrangements itself, Dr. Emery Marvel, chairman, will gladly put Fellows in communication with the management of accredited hotels, at which accommodations may be reserved.

Foreign Guests at the Victory Meeting

The American Medical Association has been officially advised that the following have been appointed by their respective governments to represent the medical profession of their countries at the Victory Meeting:

Belgium—General Melis, Colonel A. Depage, Dr. P. Nolf and Prof. J. Duesberg.

Cuba—Dr. Juan Guiteras, Director of Public Health.
Dr. Emilio Martinez, Professor in the National University.
Dr. Julio Carrera, Chief Surgeon of the Main Havana Emergency Hospital.

Medical Mobilization and the War

Personnel of the Medical Corps

For the week ending April 4, the Medical Corps contained 19,318 officers, a decrease from the previous week of 337. The Medical Reserve Corps contained 1,460 officers. The total number of medical officers discharged since the beginning of the war is 14,220.

New Chief of Section on Head Surgery

Under date of April 1 Lieut.-Col. Nelson Miles Black, M. C., U. S. Army, was designated as officer in charge of the section of head surgery, Surgeon-General's Office, vice Col. Walter R. Parker.

New Senior Consultant in Neuropsychiatry for A. E. F.

Lieut.-Col. E. G. Zabriskie of New York City has been designated senior consultant in neuropsychiatry for the American Expeditionary Forces, succeeding Col. Thomas W. Salmon, who has returned to the United States for duty in the Surgeon-General's Office. Lieutenant-Colonel Zabriskie went to France as divisional neuropsychiatrist of the fourth division. Subsequently he was consultant in neuropsychiatry to the third and fifth corps and the first army. After the armistice he served as consulting neuropsychiatrist to the Savenay hospital center.

British Greet American Medical Officers

One hundred American medical officers were recently accorded, it is reported, the first official reception ever given by British medical organizations to American physicians. These physicians arrived in London to take up postgraduate work in England. Speakers at the reception included Sir Humphrey D. Rolleston, president of the Royal Society of Medicine, who acted as host; Sir Rickman J. Godlee, presi-

dent of the Royal College of Surgeons; Sir Norman Moore, president of the Royal College of Physicians, and Sir William Arbuthnot Lane, consulting surgeon to Gny's hospital.

Medical Veterans of World War to Hold Organization Meeting

The acting officers of the Medical Veterans of the World War announce that a meeting for the purpose of effecting a permanent organization will be held Friday evening, June 13, at an hour to be announced in the *Daily Bulletin* issued during the annual session of the American Medical Association. As previously announced Col. F. F. Russell, Army Medical School, Washington, D. C., is secretary of the temporary organization. Those interested should write to him for forms for making application for membership. These applications should be accompanied by a fee of $1 to assist in defraying expenses incident to the organization and in arranging for the Atlantic City meeting. Copies of the constitution and by-laws and application blanks may also be obtained from the headquarters of the American Medical Association. Send stamped addressed envelope.

Army Medical Exhibit

On April 4 there was opened at the Army Medical Museum in Washington an exhibition of the medical activities of the war. The exhibit contains a plan of the proposed medical center at the Walter Reed Hospital, showing the architects' plan and sketches of the medical center, photographs of the present quarters and the military hospital at Fort McDowell, Calif. Another section is devoted to the work of the roentgen-ray department of the Army, showing the different units and apparatus used during the war. A third exhibition concerns infectious diseases and laboratory detail of methods of combating infectious diseases, with a graphic representation of the results. The section on surgery shows, by photographs, methods of removal of wounded, transportation, types of hospitals, wax models showing the effects of mustard gas burns and other injuries and the Carrel-Dakin method of treatment. The section on orthopedic surgery is devoted to orthopedic devices, litters, splints, etc. The division on physical reconstruction illustrates the work of this department in caring for the wounded soldier and developing him so that he may be fit for useful industrial life. The section on neuropsychiatry exhibits by means of charts the work of that department; also by photographs of hospitals and cases displaying clearly some of the difficulties which this department had to overcome. Another section concerns the Army psychologic tests showing the successive steps in testing the mental capacity of officers and soldiers. Section 9 shows by legends and charts the results of physical examinations. Another exhibition is devoted to delousing, showing models of various delousing devices, and especially buildings equipped for this purpose. The food and nutrition division shows the results of the nutritional surveys, and by numerous photographs shows food and mess conditions in the various camps. Other sections display sanitation in the camps and sanitary appliances. The exhibit of the vital statistics division shows the use of the perforated statistical cards by which it is possible to rapidly determine the prevalence of various conditions. The final section, called the war museum of the Army Medical Museum, comprises three sections of materials received from France monthly since the beginning of the war, including weapons, rifles, machine guns, helmets, gas masks, pathologic specimens and wax models.

Weekly Bulletin, A. E. F.

(March 10, 1919)

BLOCKADE EFFECTS IN GERMANY

This number of the *Bulletin* contains extracts from a report of the chief sanitary officer of civilian affairs, advance general headquarters, A. E. F., dealing particularly with undernourishment in Germany. The report points out that the death rate in Hanover has gradually risen from 9.19 per thousand per year in 1913 to 16.40 in 1918; in Berlin, from 13.48 in 1913 to 20.05 in 1918. These figures may be compared with the average death rate of New York state during 1917 of 15.5. It is stated that there were 56,861 deaths from tuberculosis in Prussia in 1913 and 86,217 in 1917, and that the death rate from this disease for Germany has gradually risen from 136.5 in 1913 to 205.7 in 1917.

In other portions of Prussia the death rate has also gradually risen. In the region of Trier it has risen from 102.3 in 1908 to 191.3 in 1918, and in Coblenz from 150 in 1915 to 352 in 1918.

Observers of the population have been led to believe that the war diet has undoubtedly been of advantage to stout, overfed people so that such diseases as diabetes and eclampsia have greatly diminished. No special change has been noted in heart and kidney diseases. Observations of infants lead Dr. V. von Franque to state that the problems, complications and accidents of labor have not increased, but that the average weight of the new-born has decreased from 7 pounds and 4 ounces to about 6 pounds. It is stated, further, that the ability of mothers to nurse infants is decreasing. The minister of the interior states that deaths of children from 1 to 5 years of age increased in Cologne. The report states also that as far as can be ascertained, the entire nation has been rationed since the winter of 1915 and since that time this ration has been under the daily needs of the people and has steadily grown worse. The majority of the people are believed to be far below their normal health weight.

Just how serious the permanent damage will be to each individual or to what proportion of the entire population is impossible to estimate. The shortage of medical and surgical supplies and certain needed drugs has been an unfavorable factor and has led to an increase in the mortality of sick persons.

CONCLUSIONS

Among the conclusions it is stated:

Child Birth. Accidents of labor have not increased. Eclampsia is diminished.

Infants. Children at birth are possibly a little below normal average weight. German authorities state that infant mortality is increasing but there is no evidence to prove it.

Children, 1 to 6 years of age.—The majority of children do fairly well. There is a definite increase in the number of deaths in various localities.

Children of school age—6 to 14 years. These children do badly. There is definite evidence to show that a very large proportion are underfed. They are anemic, poorly nourished and undersized. Children who should be gaining weight each month are losing weight or are remaining stationary. Skin diseases are prevalent. Many children are infested with lice and scabies. Tuberculosis, especially scrofula, is markedly increased.

Adults. Stout persons in good financial condition have lost weight but have been generally benefited. The well-to-do have remained in good condition. The majority of the people are thin, undernourished; their capacity for work and their natural resistance to disease are diminished. The sick in hospitals do badly; resistance is diminished after operations, convalescence retarded. The proportion of cases dying in hospital has markedly increased.

TYPHOID SUSPECTS

With a view to excluding or establishing the diagnosis of typhoid or paratyphoid fever, the chief surgeon has indicated that blood cultures will be taken in the case of all typhoid suspects on admission. If negative, two more blood cultures will be taken at the end of forty-eight and ninety-six hours, respectively, and additional blood cultures will be taken every seven days throughout the course of the illness and on the onset of relapse. In cases of fever of unknown origin three successive blood cultures are to be taken at forty-eight hour intervals, following admission to the hospital. Fecal cultures for typhoid-like organisms are to be made in all cases of typhoid suspects or in fevers of unknown origin of forty-eight hours' duration. Patients in whose stools typhoid-like organisms have been discovered are not to be discharged from the hospital on a duty status until three successive negative fecal and urine cultures have been obtained, the cultures to be taken at weekly intervals. The Widal test is also to be determined at seven-day intervals in each suspected and proved case.

WEEKLY REVIEW

During the past week there have been increases in reported cases of chickenpox (5), diphtheria (13), measles (19), scarlet fever (13) and typhoid fever (30). The reports of typhoid fever totaling 51 cases, include 31 suspects and 3 carriers. Only one case of paratyphoid was reported. Cases of meningococcus meningitis have fallen from 40 to 28 during the past week. The main "foci" of diphtheria are in the army of occupation and in the army troops in and about St. Nazaire. The annual venereal disease rate per thousand strength has risen to 36.69 from 34.20 for the previous week. The cause of the rise in the venereal rate appears to be the greatly increased number of exposures in the leave areas and the high percentage of failure to take prophylaxis after exposure. Medical officers are advised to study the conditions in their own organizations, paying particular attention to the condition of the prophylactic stations and the ratio of exposures to new cases and failure to use prophylaxis.

MEDICAL OFFICERS, U. S. NAVY, RELIEVED FROM ACTIVE DUTY

CALIFORNIA

Modesto—Morgan, J. W.
Weed—Tebbe, W. E.
Woodland—Blevins, W. J.

GEORGIA

Atlanta—Hines, J. H.
Whelchel, G. O.

ILLINOIS

Chicago—Sullivan, T. J.

MARYLAND

Long Green—Green, J. S., Jr.

MASSACHUSETTS

Boston—LeClair, H. H.

MICHIGAN

Detroit—Brengle, D. R.
Harvey, J. G.

MONTANA

Ennis—Clancy, L. J.

NEW JERSEY

Boundbrook—Kaucher, H. L.
Trenton—Kuhl, P. E.

NEW YORK

Binghamton—Sears, H. C.

NORTH CAROLINA

Elizabeth City—Peters, W. A.

OREGON

Portland—White, R. F.

PENNSYLVANIA

Elwyn—Kerr, P. M.
Philadelphia—Mallon, E. A.
Newcomer, H. S.

RHODE ISLAND

Providence—Burgess, A. M.
Kingman, L. C.

SOUTH CAROLINA

Charleston—Green, D. W.
Woodruff—Woodruff, P. E.

VERMONT

Bennington—Lane, J. D.

WASHINGTON

Tacoma—Brobeck, C. J.

HONORABLE DISCHARGES, MEDICAL CORPS, U. S. ARMY

NOTE.—In the following list, L. signifies lieutenant; C., captain; M., major; L. C., lieutenant-colonel; Col., colonel, and B. G., brigadier-general.

ALABAMA

Abbeville—Coleman, L. A. (L.)
Albertville—Goode, J. A. (L.)
Anniston—Brothers, T. J. (C.)
Cleveland, C. H. (L.)
Ashland—Graves, A. W. (L.)
Birmingham—Callaway, J. T. (L.)
Cocke, N. P. (C.)
Daly, E. W. (C.)
Rogers, M. (C.)
Wiley, C. C. (C.)
Brilliant—McDiermid, T. S. (L.)
Dothan—Barnett, T. M. (C.)
Ensley—Cowan, A. E. (C.)
Gordo—Davis, L. C. (L.)
Hamilton—Howell, H. W. (L.)
Magnolia Springs—Cowgill, E. P. (L.)
McFall—Barker, E. T. (C.)
Mobile—Bondurant, E. D. (L. C.)
Montgomery — Wilkinson, H. B. (M.)
Tuscaloosa—Lawrence, T. (C.)

ARIZONA

Bisbee—Fitzgerald, G. H. (C.)
Prescott—Southworth, H. T. (M.)

ARKANSAS

Center Ridge — Halbrook, J. F. (L.)
Gurdon—McLain, C. W. (L.)
Helena—Cox, A. W. (C.)
Little Rock—Boyce, S. G. (L.)
Marked Tree—Paullus, G. E. (L.)
Marvell—Davidson, J. S. (L.)
Rector—Parrish, W. O. (C.)
Stamps—Kitchens, W. L. (C.)
Walnut Ridge—Watkins, G. M. (C.)

CALIFORNIA

Alameda—Lum, W. T. (C.)
Bakersfield—Kellogg, C. W. (C.)
Calexico—Ellis, W. L. (C.)
Eureka—Falk, C. C. (C.)
Los Angeles—Cox, E. R. (L.)
Cunnane, T. B. (L.)
Frick, D. J. (M.)
Hastings, G. H. (C.)
McCombs, V. J. (C.)
Moore, J. R. (M.)
Mulvehill, W. W. (L.)
Mayfield—Seibert, F. M. (C.)
Mendocino City—Peirsol, F. C. (L.)
Modesto—DeLappe, F. R. (C.)
Monterey—McAuley, M. (L.)
Oakland—Kergan, J. F. (L.)
Pasadena—Condit, J. D. (M.)
Sherk, H. H. (M.)
Paso Robles—Wilmar, A. H. (L.)
Redding—Dozier, E. (C.)
Sacramento—Loizeaux, E. S. (M.)
San Diego—Waterman, I. J. (L.)
San Francisco—Clark, W. R. P. (M.)
San Francisco—Ely, L. W. (C.)
Green, J. (C.)
Moore, H. S. (M.)
Roger, J. H. D. (L.)
Slavich, J. F. (L.)
Smith, J. J. (M.)
Thibodeau, J. A. (L.)
Tomlinson, R. F. (C.)
San Jose—Gattuccis, B. (L.)
San Leandro—Fehrenson, G. (L.)
Santa Barbara—Brown, R. (C.)
Sawtelle—Roberts, E. E. (C.)
South Pasadena—Burt, R. R. (C.)
Stanford University — DeAnguio, J. (L.)
Stockton — Williamson, N. E. (M.)

COLORADO

Del Norte—Gjellum, A. B. (C.)
Denver—Levy, R. (M.)
Fort Collins—Brownell, W. F. (C.)
Fraser—Harrison, F. H. (C.)
Olathe—Groves, D. C. (C.)
Rocky Ford—Blotz, B. B. (C.)

CONNECTICUT

Bridgeport—Poole, L. E. (C.)
Hartford—Cook, A. G. (M.)
Hutchison, J. E. (C.)
Stoll, H. F. (M.)
Litchfield—Turkington, C. H. (C.)
Middletown—Wiseman, J. I. (C.)
New Haven—Notkins, L. A. (C.)
Norwalk—Muren, G. M. (M.)
Waterbury—Anderson, H. G. (C.)
Bevans, T. F. (C.)

DELAWARE

Wilmington — Lenderman, E. H. (C.)
Zion, S. M. (L.)

DISTRICT OF COLUMBIA

Washington — Alexander, S. A. (L.)
Curtis, A. L. (L.)
Hart, J. W. (M.)
Jones, T. E. (C.)
Larkin, P. E. (C.)
Norcross, A. C. (C.)
Tastet, D. W. (C.)
Thomas, J. D. (C.)

FLORIDA

Clermont—Newnham, J. A. (C.)
Miccosukee — Strickland, E. E. (C.)
Tallahassee—Moor, F. C. (C.)

GEORGIA

Athens—Harris, W. A. (L.)
Atlanta—Boyd, M. L. (C.)
Miller, O. L. (C.)
Roberts, J. W., (C.)
Augusta—Coleman, T. D. (M.)
Mathis, W. H. (L.)
Tappan, W. M. (L.)
Bainbridge—Ehrlich, S. (L.)
Calhoun—Ellis, J. C. (L.)
Catersville—Howell, S. M. (L.)
Devereux—Scott, W. M. (L.)
Eastman—Herrmann, F. H. (C.)
Girard—Royal, L. B. (L.)
Hampton—Lyday, W. H. (L.)
Lavonia—Heller, W. B. (L.)
McDonough—Horton, B. E. (L.)
Moultrie—Massey, W. W. (L.)
Sale City—Belcher, D. P. (L.)
Savannah—DeCaradeuc, S. R. (C.)
Lee, L. (C.)
O'Rear, W. B. (C.)
Valdosta—Bird, F. (C.)
Sloan, W. D. (L.)
Zebulon—Head, M. M. (C.)

IDAHO

Nampa—Hull, A. R. (C.)
Watson, C. E. (C.)
Parma—Numbers, D. S. (C.)
Rockland—Logan, V. G. (L.)
Weston—Quick, R. W. (L.)

ILLINOIS

Aledo—Mackey, A. N. (L.)
Astoria—Price, E. M. (L.)
Belvidere—Alguire, A. (C.)
Bloomington—Maurer, F. R. (L.)
Buffalo—Lutyens, G. B. (L.)
Canton—Hirschle, H. G. (L.)
Centralia—Hall, F. W. (C.)
Champaign — Dallenbach, J. C. (M.)
Davis, C. S. (C.)
Chicago—Beil, H. H. (L.)
Blum, J. M. (C.)
Buckley, N. C. (L.)
Calhoun, W. H. (L.)
Cleary, J. P. (C.)
Cox, R. H. (M.)
Culbertson, C. (M.)
Damron, J. E. (L.)
Daum, E. F. (C.)
Dickenson, S. C. (C.)
Edison, S. M. (C.)
Evans, J. H. (C.)
Finley, J. R. (L.)
Fox, E. F. (L.)
Glassman, L. (L.)
Guy, S. D. (L.)
Hayden, D. B. (C.)
Johnson, R. M. (L.)
Krohn, W. O. (C.)
Kulyinsky, M. M. (L.)
Lawson, J. F. (L.)
Lueders, A. H. (C.)
Lyngh, S. E. (L.)
MacLane, C. C. (C.)
Novak, F. J., Jr. (C.)
Ogden, A. W. (L.)
Pierce, N. H. (M.)
Pincoffs, M. C. (C.)
Shackelton, W. E. (C.)
Small, J. C. (L.)
Vander Bogart, H. E. (L.)
Dahlgren—Gross, R. R. (L.)
Danville—Ross, H. E. (M.)
Dietrich—Dunn, J. W. (C.)
East St. Louis—Tharp, R. (C.)
Effingham — Wettstein, J. C. R. (L.)
Freeport—Sikes, E. W. (L.)
Highland Park—Roberts, H. B. (C.)
Joliet—Eldred, C. D. (C.)
Kankakee—Dyer, W. K. (C.)
Ricksher, C. (C.)
Lawrenceville—Trumblood, R. R. (C.)
Libertyville—Martin, F. H. (C.)
Litchfield—Bennett, H. F. (C.)
Marengo—Gooder, W. V. (C.)
Marion—Fowler, L. L. (C.)
Marshall—Rose, J. J. (L.)
Momence—Nickerson, A. L. (C.)
Muncie—Michael, O. W. (C.)
Murphysboro—Evans, W. H. (L.)
Newman—Gillogly, R. C. (C.)
Peoria—Crooks, W. A. (C.)
Hubbard, A. E. (L.)
Seaburg, E. W. (L.)
Peru—Yoder, O. C. (C.)
Petersburg—Orr, L. E. (L.)
Pontiac—Bach, I. W. (L.)
Princeton—Schroeder, F. B. (L.)
Rockford—Allaben, G. R. (C.)
Park, W. E. (C.)
Springfield—Coen, W. W. (L.)
Sycamore—Bell, F. H. (C.)
Urbana—Finch, J. H. (M.)
Virden—Morgan, T. W. (C.)
Waukegan—Ambrose, C. S. (C.)
Zeigler—Moore, J. B. (C.)

INDIANA

Dillsboro—Long, H. P. (L.)
Evansville—Ehrich, W. S. (C.)
Fort Wayne—Crull, E. A. (C.)
Duemling, H. A. (C.)
Georgetown—Ricketts, F. B. (L.)
Greenfield — McGaughey, C. W. (C.)
Hammond—Young, A. A. (L.)
Indianapolis—Aubla, C. S. (L.)
Bowman, G. W. (C.)
Clark, E. D. (L. C.)
Criss, N. L. (L.)
Deitch, O. S. (C.)
Erdman, B. (C.)
Pendleton, G. H. (C.)
Leesburg—Fermier, P. G. (L.)
Logansport—Nelson, J. V. (C.)
Marion—McQuown, O. W. (C.)
Martinsville — Breedlove, G. B. (C.)
Mishawaka—Seymour, T. F. (L.)
Noblesville—Tucker, F. A. (L. C.)
Princeton—Cushman, R. A. (C.)
Shelburn—Maple, J. B. (C.)
South Bend—Boyd-Snee, H. (C.)
Terre Haute—Combs, C. N. (C.)
Weir, E. A. (L.)
Union City—Zeller, W. C. (L.)
Warsaw—Truelove, A. O. (L.)

IOWA

Albia—Byers, A. G. (C.)
Cedar Rapids — Johnson, N. W. (C.)
Clinton—Mansfield, J. M. (L.)
Corwith—Fillmore, R. S., Jr. (L.)
Council Bluffs—Fonda, J. W. (L.)
Davenport—Ficke, E. O. (C.)
Des Moines—Lincoln, S. E. (C.)
De Sota—Brewer, M. T. (L.)
Dubuque—Kearney, C. A. (C.)
Pond, A. M. (C.)
Fort Dodge—McCreight, A. H. (C.)
Hampton—Long, W. K. (C.)
Hedrick—Henry, R. V. (C.)
Independence—Allen, H. C. (L.)
Marshalltown—Battin, J. F. (C.)
Mason City—Hoag, H. M. (C.)
Smith, A. D. (L.)
Monticello—Thomas, C. G. (L.)
Mount Pleasant—Laird, J. W. (L.)
North English—Jones, H. J. (M.)
Ottumwa—Bannister, M. (C.)
McElderry, D. (C.)
Remsen—Hombach, W. H. (L.)
Sioux City—Heard, T. M., Jr. (C.)
Naftzger, J. B. (C.)
Titonka—Wallace, R. M. (L.)
Waterloo—Jaynes, E. T. (C.)
Woodbine—Anderson, H. N. (C.)

KANSAS

Bison—Robison, N. W. (C.)
Bucyrus—McGonigle, G. L. (C.)
Ellis—Kidd, N. A. (L.)
Garnett—Hood, T. A. (C.)
Humboldt—Webb, H. M. (L.)
Independence — Chaney, W. C. (C.)
Kansas City—Davis, R. C. (L.)
Kinley, C. E. (C.)
Maplehill—King, G. A. (L.)
National Military Home — Shawhan, R. C. (L.)
Neodesha—Randall, C. L. (C.)
Oswego—Price, C. C. (C.)
Palmer—Hawthorne, H. B. (C.)
Pittsburg—Owensby, O. M. (C.)
Randall—Blades, J. B. (L.)
Rosedale—Marchbanks, H. E. (L.)
Russell—Hawes, F. S. (L.)
Salina—Moses, H. N. (C.)
Topeka—Cook, E. D. (L.)
Gootee, H. W. (L.)
Knowlton, M. (C.)
Wilson—Carter, J. B. (C.)

KENTUCKY

Auburn—Simpson, J. P. (L.)
Bowling Green — McCormack, A. T. (L. C.)
Brandenburg — Hartman, E. C. (C.)
Campbellsville — Buckner, F. I. (L.)
Gage—Ashbrook, W. A. (L.)
Greenville—Yost, E. R. (C.)
Hickman—Prather, H. E. (C.)
Lebanon—Kobert, C. B. (C.)
Lexington—Bradley, E. B. (M.)
Louisville—Arnold, I. A. (C.)
Freeman, J. K. (C.)
Harris, D. H. (C.)
Horine, E. F. (C.)
Sherrill, J. G. (L. C.)
Pembroke—Barker, J. L. (C.)
Pineville—Combs, M. (L.)
Princeton—Ogilvie, R. W. (M.)
Taylorsville — Shepherd, R. Y. (C.)

LOUISIANA

Barham—Self, C. C. (C.)
Baton Rouge—Robert, J. J. (M.)
De Ridder—Frazer, J. D. (L.)
Erath—Kibbe, P. A. (C.)
Jonesville—Yancey, E. R. (L.)
Madisonville—Verdier, C. E. (L.)
Mansura—Roy, K. A. (L.)
New Orleans—Bendel, W. L. (L.)
Carter, P. J. (L.)
Elliott, J. B. (L. C.)
Genella, L. J. (C.)
LeDoux, L. A. (L.)
Leemann, I. I. (C.)
Miller, C. J. (M.)
Pothier, O. L. (M.)
Stone, R. E. (C.)
Poydras—Dunshie, J. F. (M.)
Shreveport—Oden, P. W. (L.)
St. Francisville—Butler, T. (L.)

MAINE

Portland—Clarke, C. L. (C.)
Kalloch, D. C. (C.)
Rumford—Stamwood, H. W. (L.)

MARYLAND

Baltimore—Colston, J. A. C. (M.)
DeBray, E. S. (C.)
Diaz-Garcie, M. (L.)
Ellis, E. D. (M.)
Evans, A. M. (L.)
Evans, F. A. (C.)
Guthrie, C. G. (C.)
Happ, W. M. (C.)
Hoffman, R. V. (L.)
Hutchins, A. F. (C.)
King, J. H. (C.)
Nichols, F. K. (C.)
Slack, H. R. (C.)
Sorenson, A. C. (C.)
Stone, H. B. (M.)
Valentini, J. L. (L.)
Govans—Bishop, G. W. (C.)

MASSACHUSETTS

Ayer—Hopkins, B. H. (C.)
Boston—Briggs, L. V. (L. C.)
Chadwell, O. R. (C.)
Cohen, N. M. (L.)
Eaton, H. B. (C.)
Emmons, A. B. (C.)
Joslin, E. P. (L. C.)
Clinton—Chase, G. L. (C.)
Concord—Bartlett, W. B. (L.)
Fall River—Cox, T. (C.)
MacKnight, W. F. (C.)
Framingham — Jessaman, L. W. (C.)
Great Barrington — Peters, J. D. (M.)
Hatfield—Beals, L. H. (C.)
Hinsdale—Tucker, W. L. (L.)
Lawrence—Burnham, J. F. (C.)
Lowell—Bryant, M. D. (M.)
Lynn—Hartmann, G. (C.)
Merrill, C. H. (C.)
Somerville—McLean, J. A. (C.)
Southbridge—Tetrault, C. A. (C.)
Springfield—Ferguson, R. (C.)
Waverly—Otis, W. J. (M.)
Worcester—Leib, E. R. (L.)
Ward, R. J. (C.)

MICHIGAN

Ann Arbor—Sherrick, J. W. (C.)
Bangor—Murphy, N. D. (C.)
Battle Creek—Kellogg, K. H. (C.)
Knapp, H. B. (C.)
Detroit—Carr, J. G. (C.)
Cohoe, D. A. (L.)
Hickey, P. M. (L. C.)
Hoffmeister, G. (C.)
Matthews, J. D. (C.)
Mayer, W. D. (C.)
McDonald, F. J. (L.)
Morris, H. L. (L.)
Myers, G. P. (C.)
Ryerson, F. L. (L.)
Safford, H. E. (C.)
Van Horne, J. A. (C.)
Flint—Orr, J. W. (C.)
Roberts, F. A. (M.)
Ionia—Powers, J. H. (C.)
Kalamazoo—Eaton, D. H. (M.)
Midland—St. Louis, R. J. (L.)
Onaway—Sill, J. (C.)

MINNESOTA

Annandale—Norris, G. H. (C.)
Brinerd—Badeuax, G. I. (L.)
Duluth—Haney, C. L. (C.)
Grand Rapids—Gendron, J. F. X. (C.)
Hopkins—Morris, M. (C.)
Howard Lake—Moffatt, A. G. (C.)
Lowry—Gibbon, L. L. (L.)
Mahnomen — Rumreich, E. A. (L.)
Minneapolis — Rowntree, L. G. (L. C.)
Rice—Rathbun, C. A. (L.)
Sanborn—Piper, M. C. (L.)
Section Thirty—St. Clair, G. G. (C.)
Sleepy Eye—Strickler, A. F. (L.)
St. Paul—Colvin, A. R. (M.)
Hesselgrave, S. S. (L.)
Lemke, G. F. (C.)

MISSISSIPPI

Bentonia—Day, C. A. (L.)
Clarksdale—Bush, T. J. (L.)
Clinton—Powell, J. E. (C.)
Foote—Worthington, T. F. (C.)
Hattiesburg—Martin, L. H. (C.)
Jackson—Walker, C. E. (L.)
Magnolia—Smith, J. M. (L.)
McComb—Gordon, E. R. (L.)
Meridian—Guthrie, J. M. (C.)
Natchez—Ullman, J. S. (C.)
Polo—Parrish, I. N. (L.)
Water Valley—Carr, H. R. (L.)
Webb—Harris, J. A. (C.)

MISSOURI

Anderson—Buck, S. B. (L.)
Cape Girardeau—Yount, W. E. (C.)
Carthage—Post, W. B. (M.)
Corder—Moore, E. M. (L.)
Dadeville—Drisdel, T. J. (L.)
DeWitt—Cole, B. C. (L.)
Fair Play—Brown, C. H. (C.)
Fulton—Major, H. S. (C.)
Gower—Starks, J. C. (L.)
Hawk Point—Butler, J. (M.)
Holcomb—Drace, C. C. (C.)
Jefferson City — Bedford, S. V. (C.)
Kansas City—Hiller, F. B. (M.)
Hofmann, O. (L.)
Kuhn, H. P. (M.)
Lee's Summit—Ragsdale, T. J. (C.)
Louisiana—Miller, I. H. (C.)
Malden—Van Cleve, J. D. (L.)
Odessa—Mills, R. F. (C.)
Orrick—Sheetz, R. (C.)
Piedmont—Toney, L. E. (C.)
Portage Des Sioux—Arnold, U. S. G. (C.)
Potts—Lockwood, W. E. (L.)
St. Joseph—Elam, W. T. (C.)
St. Louis—Ayars, T. R. (M.)
Burdick, J. J. (C.)
Clapsaddle, C. J. (L.)
Gundlach, A. (C.)
Hirschi, W. T. (C.)
Lyter, J. C. (C.)
McIntire, J. C. (L.)
Montague, H. L. (C.)
Moore, N. S. (L.)
Morfit, J. C. (L. C.)
Peden, S. E. (L.)
Post, M. H., Jr. (C.)
Schlueter, R. E. (M.)
Schuck, P. (C.)
Schwab, S. I. (M.)
Sewing, A. H. (C.)
Thompson, J. C. (L.)
Wiener, M. (M.)
Wilhite, G. O. (L.)
Woodruff, F. E. (M.)
Yahlem, N. N. (L.)
Young, H. M. (M.)

MONTANA

Billings—Wernham, J. I. (C.)
Butte—Witherspoon, T. C. (L. C.)
Bozeman—Jump, C. W. (C.)
Corvallis—King, W. N. (C.)
Great Falls—Adams, F. J. (M.)
Havre—MacKenzie, D. S. (C.)
Helena—Johnson, E. A. (C.)
Nashua—Currie, A. N. (C.)

NEBRASKA

Atkinson—Douglas, W. J. (C.)
Belden—Fletcher, F. W. (L.)
David City—Burdick, H. E. (C.)
Florence—Ross, W. L., Jr. (C.)
Genoa—King, H. E. (C.)
Gretna—Pinckney, C. E. (C.)
Hay Springs—Molzahn, A. J. (C.)
Kenesaw—Townley, F. N. (L.)
Lexington—Brix, A. E. (L.)
Lincoln—Arnold, C. H. (C.)
Omaha—Lake, F. W. (C.)
Martin, O. W. (C.)
Newell, C. H. (C.)
Nilsson, J. R. (C.)
Stodden, F. J. (L.)
Tamisiea, J. A. (L.)
Uren, C. T. (C.)
Oxford—Cone, E. E. (C.)
Stuart—McDermott, B. V. (L.)
Tecumseh—Cramb, A. B. (L.)
York—King, D. B. (C.)

NEVADA

Tonopah—Church, C. H. (L.)

NEW HAMPSHIRE

Claremont—Cushman, E. P. (C.)
Manchester—Fiske, G. V. (L. C.)
Nashua—Maynard, O. S. (C.)
West Lebanon — Wilson, H. B. (L.)

NEW JERSEY

Barnegat—Bunnell, F. N. (L.)
Barnsboro—Chalfant, W. P. (C.)
Cape May Court House — Douglass, J. S. (C.)
East Orange—Gore, M. E. (L.)
East Rutherford — O'Brien, P. (C.)
Elizabeth—Tilton, W. R. (L.)
Jersey City—Higgins, G. L. (L.)
Tidwell, H. F. (L.)
Long Branch — Strahan, F. G. (L.)
Morristown—Sutphen, E. B. (C.)
Mullica Hill — Chalfant, H. B. (C.)
Newark—Cook, H. F. (C.)
Lowrey, J. H. (L.)
Silverstein, B. J. (L.)
Newton—Cole, B. (C.)
Ocean Gate—Levy, J. J. (L.)
Parlin—Gehrman, G. H. (L.)
Passaic—Carlisle, J. H. (C.)
Paterson—Dingman, T. A. (C.)
Norval, W. A. (C.)
Plainfield—Lufburrow, C. B. (C.)
Summit—Allen, E. P. (L.)
Ehlers, E. A. (L.)
Trenton—Seibert, R. S. (C.)
West New York—Roberts, E. W. (C.)

NEW MEXICO

East Las Vegas — Mills, W. P. (M.)
Farmington — Sammons, G. W. (C.)
Santa Fe—Erdlitz, F. J. (L.)
Mera, F. E. (C.)
Taos—Martin, T. P. (C.)

NEW YORK

Albany—Howard, W. P. (C.)
Rissberger, C. A. (L.)
Amsterdam—Windbiel, J. E. (L.)
Brooklyn—Brown, F. X. (C.)
Browne, W. T. (C.)
Frank, C. R. (L.)
Laing, W. W. (C.)
Lasher, F. H. (C.)
McWilliams, C. A. (M.)
Miller, S. (C.)
Norton, H. L. (C.)
Richardson, F. H. (C.)
Sim, A. S. (M.)
Buffalo—Brennan, J. P. (C.)
Brundage, F. E. (L.)
Clinton, M. (L. C.)
Lennon, F. J. (L.)
Mann, B. (M.)
McCarthy, A. E. (C.)
Nowicki, J. A. (L.)
Plummer, W. W. (M.)
Camden—Lyons, G. C. (C.)
Cassadaga—Edmund, H. S. (C.)
Clark Mills—Jones, F. G. (C.)
Flushing—Hallstead, W. G. (L.)
Glens Falls—Clarke, H. E. (C.)
Maslon, M. (L.)
Good Ground—Chattle, T. H. (C.)
La Grangeville—Grace, R. (C.)
Massena—Elkins, C. E. (C.)
Mount Upton—Heimer, F. S. (C.)
New York—Babcock, J. W. (L.)
Bishop, F. W. (L.)
Burlingham, R. (L.)
Casamajor, L. (M.)
Cobb, J. L. (C.)
Colie, E. M., Jr. (M.)
Darlington, T. (M.)
Goldstein, T. P. (L.)
Hooker, R. S. (M.)
Hopkins, J. G. (C.)
Joy, H. H. (L.)
Kirwin, T. J. (C.)
Kline, B. S. (C.)
MacCurdy, J. T. (C.)
Marks, T. M. (L.)
McCoy, T. C. (C.)
Morris, J. H. (C.)
Nahum, L. H. (C.)
Oppenheimer, B. S. (L. C.)
Peterson, E. W. (M.)
Phelps, G. M. (C.)
Philips, H. B. (L.)
Schapira, S. W. (M.)
Smith, G. T. (C.)
Somerville, W. A. (C.)
Stillman, A. (M.)
Titus, N. E. (C.)
White, W. C. (C.)
Williams, P. H. (L. C.)
Winslow, T. S. (L.)
Woodbury, W. E. (L. C.)
Niagara Falls—Bishop, J. L. (C.)
Perrysburg—Graves, A. B. (C.)
Rochester—Dessloch, J. C. (L.)
Fiach, R. R. (M.)
Saranac Lake—Soper, W. B. (M.)
Schenectady—Dunn, J. M. (C.)
McPartlon, P. (C.)
Syracuse—Kevand, J. H. (C.)
Troy—Noonan, F. J. (M.)
Utica—Baldwin, C. H. (C.)
Westbury—Booth, L. S. (C.)
Yonkers—Boyce, W. E. (M.)
Youngstown—Falkner, L. W. (M.)

NORTH CAROLINA

Atkinson—Hoggard, J. T. (L.)
Fairfield—Burrus, T. P. (L.)
Greensboro—Oliver, A. S. (L.)
Greenville—Laughinghouse, C. O. N. (L. C.)
Laurinburg—Cannady, N. B. (C.)
Matthews—Orr, W. L. (L.)
Raleigh—Abernethy, C. O. (C.)
Rutherfordton—Norris, H. (M.)
Smithfield—Hooks, T. (C.)
Tyron—Palmer, M. C. (C.)
Whiteville—Maxwell, H. B. (C.)

NORTH DAKOTA

Berthold—Hillis, S. J. (M.)
Crystal—Scott, R. A. (L.)
Dickinson—Stickney, V. H. (C.)
Enderlin—Ostrander, A. J. (C.)
Grand Forks — Campbell, R. D. (C.)
Fisher, L. F. (L.)
Healy, H. H. (C.)
Minot—Wheelon, F. E. (M.)
New England — Sarchet, G. A. (C.)
Williston—Skovholt, H. T. (L.)

OHIO

Akron—Dixon, C. A. (C.)
Barberton—Smallman, H. L. (L.)
Stepfield, R. E. (L.)
Bowling Green—Gorsuch, G. A. (C.)
Celina—Gibbons, J. T. (L.)
Cincinnati—Hagen, J. S. (C.)
Souther, C. T. (C.)
Cleveland—Bogart, C. S. (L.)
Kennedy, E. P. (L.)
Sharp, W. D. (C.)
Zinner, N. L. (C.)
Columbus—McDowell, J. R. (M.)
Price, J. (M.)
Rice, R. A. (C.)
Sandoe, D. (L.)
Sharp, C. E. (C.)
Straushaugh, H. D. (L.)
Taylor, W. N. (L.)
Thornton, R. A. (L.)
Dayton—Burnett, H. W. (L.)
Elyria—Kramer, J. C. (C.)
Findlay—Keator, W. B. (L.)
Fremont—Phillips, M. O. (C.)
Gibsonburg—Eyestone, A. G. (C.)
Levanna—Pangburn, L. E. (L.)
Lima—Bradfield, J. C. (C.)
Knisely, A. D. (C.)
London — Christopher, H. V. (C.)
Marietta—Smith, A. H. (M.)
Marion—Hoskins, J. M. (C.)
Martins Ferry—McGinnis, J. C. (C.)
Newcomerstown — Berry, E. V. (L.)
Niles—Knox, J. D. (C.)
Oberlin—Colegrove, P. C. (L.)
Orrville—Ulrich, O. P. (L.)
Piqua—Thomas, F. W. (L.)
Springfield—Jones, C. L. (C.)
Toledo—Flower, H. M. (C.)
Grosh, L. C. (C.)
Upper Sandusky—Bowman, J. C. (L.)
Urbana—Pearce, H. M. (C.)
Youngstown—Cameron, R. L. (C.)

OKLAHOMA

Altus—Rudell, W. P. (L.)
Anadarko—Edens, M. H. (L.)
Antlers—Guinn, E. (L.)
Bennington—Gentry, I. L. (L.)
Bokoshe—King, J. T. (L.)
Cheyenne—Wallace, G. H. (L.)
Coalgate—Clark, J. B. (C.)
El Reno—Herod, P. F. (C.)
Moore, D. M. (L.)
Henryetta—McKinney, G. Y. (L.)
Hollis—Pendergraft, R. L. (L.)
Hugo—Harris, G. E. (C.)
Lawton—Lewis, J. L. (C.)
Lexington — Thacker, R. E. L. (L.)
Meeker—Hurlbut, E. F. (L.)
Miami—James, E. D. (L.)
Rowley, W. T. (C.)
Muskogee—Earnest, A. N. (C.)

Oklahoma City — Taylor, G. B. (C.)
Jaoli—Lain, E. H. (L.)
Poteau—Winter, J. D. (L.)
Ralston—McBride, E. D. (L.)
Roll—Grant, V. V. (L.)
Tahlequah—Thompson, J. M. (L.)
Talihina—Shepard, R. M. (L.)
Tulsa—Capps, J. F. (C.)
Mohrman, S. S. (L.)
Waurika—Derr, J. I. (L.)
Woodward—Patterson, J. L. (C.)

OREGON

Dufur—Dodds, H. C. (L.)
Forest Grove—Hawke, C. E. (C.)
Granite Pass—Clement, L. O. (L.)
Lakeview—Fox, M. C. (L.)
Marshfield—Mingus, E. (C.)
Portland—Botkins, A. W. (L.)
Coffen, T. H. (C.)
Folsom, E. B. (M.)
Lieuallen, F. A. (C.)
Vale—Bartlett, C. J. (C.)

PENNSYLVANIA

Allentown—Weaver, J. M. (L.)
Ambler—Gilliland, S. H. (M.)
Apollo—Lewis, R. N. (C.)
Bloomsbury—Bierman, H. (C.)
Bristol—Abbott, C. S. (C.)
Butler—Campbell, E. E. (M.)
Clymer—Everwine, M. J. (L.)
Conneaut Lake — Brush, H. L. (C.)
Connellsville—Junk, J. L. (C.)
Darlington — Watterson, R. W. (L.)
Donora—Hanlon, T. J. (C.)
Doylstown—Murphy, F. A. (L.)
Eldred—Humphreys, F. R. (L.)
Erie—Davis, A. G. (L.)
Ireland, J. L. (C.)
Lloyd, J. H. (C.)
Glenolden—Turner, J. H. (L.)
Harrisburg—Treiman, G. A. (L.)
Indiana—Gates, W. D. (C.)
Mahanoy City—Hensyl, G. S. (L.)
Monessen—Farquhart, D. C. (C.)
New Castle—Lindley, D. C. (L.)
Nicholson—Decker, V. (C.)
Oxford—Barry, C. L. (C.)
Philadelphia—Bond, E. D. (M.)
Cahan, J. M. (L.)
Cattell, H. W. (M.)
Donahue, J. L. (C.)
Fisher, L. (M.)
Gorman, J. F. (L.)
Haines, W. H. (L.)
Knight, I. W. (C.)
Martin, A. T. (C.)
Miller, R. J. (L.)
O'Daniel, A. A. (C.)
West, J. W. (C.)
Wingrade, S. L. (L.)
Pittsburgh—Atkinson, P. G. (L.)
Baker, T. (C.)
Brenneman, R. E. (M.)
Bowen, C. J. (L.)
Clarke, J. J. (C.)
Frank, A. G. (C.)
Hood, R. T. (L.)
Major, R. S. (C.)
Punxsutawney—Klotz, J. A. (L.)
Republic—Ryan, C. C. (L.)
Saltsburg—Lytle, R. M. (L.)
Schwenkville—Allen, H. C. (M.)
Scranton—Noecker, C. B. (C.)
Sewickley—McCready, F. L. (C.)
Shanor, C. K. (C.)
Sharpsburg—Diess, W. C. (L.)
Sharpsville—Biggnis, P. E. (L.)
Spinnerstown—Marsteller, V. K. (L.)
Tarentum—Orris, C. S. (L.)
Titusville—Eiler, V. B. (C.)
Wilkes-Barre—Ross, N. (C.)
Wilkinsburg—Pitcairn, E. A. (C.)
Woodbine—Smith, W. C. (L.)
Woodsville—Hill, R. L. (M.)
York—Parker, B. F. (C.)

RHODE ISLAND

Providence—Capwell, R. P. (C.)
Hanchett, A. K. (M.)
Noyes, L. H. (C.)

SOUTH CAROLINA

Chester—Love, S. G. (L.)
Columbia—Weston, W. (M.)
Mayesville—Mills, J. H. (L.)
Rock Hill—Rakestraw, C. M. (C.)
Bigger, D. A. (L.)
Scotia—Fishburne, C. C. (L.)

SOUTH DAKOTA

Deadwood—Moffitt, T. W. (C.)
Fulton—Lowthian, G. H. (C.)
Scotland—Landmann, G. A. (C.)
Wagner—Pinard, P. R. (C.)
Willow Lake—Benner, W. J. (C.)

TENNESSEE

Franklin—Cliffe, D. B. (C.)
Harriman—St. John, G. F. (C.)
Idol—McDonald, B. L. (M.)
Jackson—Saunders, W. G. (M.)
Lexington—Davidson, C. L. (L.)
Memphis—Haase, M. (M.)
Karsch, J. H. (C.)
Somerville, W. G. (M.)
Watkins, E. D. (C.)
Nashville—Hardy, W. M. (L.)
Harris, A. W. (C.)
Lassiter, J. H. (C.)
Lee, J. M. (C.)
Pulaski—Blackburn, J. K. (C.)

TEXAS

Abilene—Alexander, S. M. (C.)
Alvin—Pollard, A. J. (L.)
Archer City—Hooper, J. M. (C.)
Bellville—Neely, J. A. (L.)
Brackettville—Nipper, W. W. (C.)
Bridgeport—Braselton, B. E. (C.)
Brownsville—Dickason, E. E. (C.)
Dalhart—Dawson, G. W. (C.)
Dallas—Ard, B. N. (L.)
Carlisle, G. L. (L.)
Morris, I. J. (C.)
Newsom, H. G. (L.)
Pierce, F. A. (C.)
Travis, R. T. (L.)
Turner, J. S. (C.)
Denison—Morrison, M. M. (L.)
Detroit—Caton, J. H. (L.)
El Paso—Cummins, E. J. (C.)
McCamant, T. J. (M.)
Fort Worth—Cleaves, P. B. (C.)
Hayes, C. F. (C.)
May, J. C. (L.)
Terrell, T. C. (L.)
Warwick, H. L. (C.)
Frisco—Frechet, E. A. (C.)
Galveston—Thrasher, B. O. (M.)
Gorman—Blackwell, E. C. (L.)
Graham—Gant, C. B. (L.)
Guadalupe—Beaty, G. S. (L.)
Houston—Delambre, J. J. (L.)
Denman, P. R. (M.)
Goar, E. L. (M.)
Legnard, J. B. (C.)
Hubbard—Etter, R. (L.)
Humble—Dameran, J. H. (C.)
Falvey, J. C. (L.)
Loit—Parrott, F. C. (C.)
Marshall—Baldwin, J. B. (L.)
New Brainfels — Hagler, M. C. (C.)
Oakland—Pridgen, R. E. (L.)
Paducah—Wilkins, J. S. (C.)
Palacios—Loos, H. H. (L.)
Park Springs—Norris, J. (C.)
San Antonio—Cade, C. C. (C.)
Gibson, J. F. (C.)
McDaniel, A. C. (M.)
Sorell, F. W. (C.)
Timmins, O. H. (L.)
Santa Anna—Holland, W. F. (L.)
Sherman—Holt, J. H. (L.)
Taylor—Bledsoe, R. E. B. (C.)
Temple—Kimmins, R. L. (C.)
Longmire, V. M. (L.)
Texarkana—Smith, J. K. (L.)
Tyler—Pope, J. H. (L.)
Waco—Collins, C. E. (L.)
Yoakum—Milner, R. M. (L.)

UTAH

Garland—Day, J. E. (L.)
Marysvale—Heath, C. J. (C.)
Ogden—Dumke, E. R. (C.)
Payson—Curtis, A. L. (C.)
Salt Lake City—Galligan, J. J. (C.)
Goeltz, F. A. (L.)

VERMONT

Barre—Woodruff, J. H. (C.)
Rutland—Marshall, G. G. (C.)
Waterbury—Goodrich, S. L. (C.)

VIRGINIA

Alexandria—Moore, S. B. (M.)
Appalachia—Smith, H. R. (L.)
Litwalton—Peirce, C. T. (C.)
Newport News—Armory, O. T. (C.)
Norfolk—Etheridge, H. R. (L.)
Richmond—Geisinger, J. F. (C.)
Harris, H. L. (L.)
Roanoke—Jones, A. P. (C.)
Rural Retreat — Greiner, A. B. (L.)
Staunton—Bradford, K. (C.)
University—Lile, M. C. (C.)
Smith, R. E. (C.)
Waterford — Rusmiselle, L. T. (C.)

WASHINGTON

Aberdeen—Goodnow, L. L. (C.)
Bellingham — Kirkpatrick, W. D. (M.)
Chewelah—Hauber, C. A. (L.)
Fort Worden—Payne, W. H. (C.)
Hoquiam—Hunter, R. F. (C.)
Medical Lake—Allen, J. A. (C.)
Monroe—Cox, E. W. (C.)
Olympia—Roberts, N. E. (C.)
Puyallup—Barry, S. D. (C.)
Roslyn—Piro, V. (L.)
Seattle—Lanter, E. C. (L.)
Shuler, I. J. D. (L.)
Swift, G. W. (C.)
Spokane—Miller, F. S. (L.)
Tacoma—Curran, T. B. (C.)
McNerthney, W. B. (C.)
Yakima—Moffitt, L. (L.)

WEST VIRGINIA

Fairmont—Peters, A. L. (C.)
Powell, R. H. (M.)
Morgantown—Hott, D., Jr. (C.)
Parkersburg—Barker, O. D. (C.)
Link, W. S. (C.)
Sheperdstown—Bragonief, R. K. (L.)
Sistersville—Keller, F. E. (L.)
Wheeling—Kelly, M. B. (C.)

WISCONSIN

Barron—Post, C. C. (C.)
Beloit—Helm, H. M. (L.)
Chetek—Prill, J. H. (C.)
Dale—Johnston, W. M. (L.)
Edgerton—Shearer, A. T. (L.)
Elroy—Vogel, C. C. (M.)
Greenwood — Boeckmann, F. A. (L.)
Lake Mills—Eck, G. E. (C.)
Menomonee Falls—Campbell, W. B. (C.)
Milwaukee — Ackermann, W. B. (C.)
Mitten, A. A. (C.)
Seaman, G. E. (Col.)
Stevens Point—Bird, J. W. (C.)
Watertown — Nowack, L. H. A. (L.)
Waukesha—Aplin, F. W. (C.)

ORDERS TO OFFICERS OF THE MEDICAL CORPS, U. S. ARMY

Alabama

To Fort McPherson, Ga., from Camp Dix, Major W. M. JORDAN, Birmingham.

To Hoboken, N. J., from Camp Jackson, Lieut. J. D. DURDEN, Montgomery.

The following order has been revoked: *To Camp Gordon, Ga.*, Capt. J. R. OSWALT, Union Springs.

Arizona

To Camp Travis, Texas, as tuberculosis examiner, from Fort Sam Houston, Capt. S. D. WHITING, Salt River.

Arkansas

To report to the commanding general, Philippine Department, from Camp Pike, Major G. D. CHUNN.

California

To Camp Kearney, Calif., from Camp Dix, Major W. A. MORRISON, Los Angeles. As commanding officer of base hospital, from Camp Fremont, Lieut.-Col. C. W. HAVERKAMPF.

To Fort Sam Houston, Texas, base hospital, from Camp A. A. Humphreys, Lieut. R. W. KARRAS, Soldiers Home.

To Fort Sill, Okla., from Camp Kearney, Col. F. W. PALMER.

To San Francisco, Calif., Letterman General Hospital from Baltimore, Capt. P. WEGEFORTH, San Diego; from Camp Dix, Lieut.-Col. W. I. BALDWIN, Major J. L. WHITNEY, San Francisco; from Camp Fremont, Capts. D. P. FLAGG, C. L. LOWMAN, Los Angeles; Lieut. C. D. SWEET, Fresno.

Colorado

To Fort D. A. Russell, Wyo., from Camp Dix, Major L. C. BOLTON, Cedaredge.

To Fort Sill, Okla., base hospital, from Denver, Capt. C. G. McEACHERN, Denver.

Connecticut

To Camp Devens, Mass., base hospital, from Camp Dix, Capt. H. L. BURR, Middletown.

To Camp Upton, N. Y., as tuberculosis examiner, from New Haven, Capt. L. J. LOEWE, Higganum.

To Hoboken, N. J., from Army Medical School, Lieut.-Col. G. W. HAWLEY, Bridgeport; from Camp Jackson, Lieut. W. J. H. FISCHER, Milford.

To Lakewood, N. J., from New Haven, Major A. FREER, Lieut. J. B. ANDERSON.

To Walter Reed General Hospital, D. C., from Camp Custer, Capt. Capt. A. E. AUSTIN, South Beach.

To Washington, D. C., and on completion *to Camp Jackson, S. C.*, base hospital, from Camp Dix, Lieut. J. F. O'BRIEN, Hartford.

District of Columbia

To Army Medical School, D. C., from New Haven, Major R. D. ADAMS, Washington.

To Fort Washington, Md., from Camp Dix, Capt. A. M. ZINKHAN, Washington.

To Washington, D. C., Surgeon-General's Office, from Hoboken, Major D. L. BORDEN, Washington.

Florida

To Walter Reed General Hospital, D. C., from Camp Jackson, Lieut. R. H. KNOWLTON, Petersburg.

To Washington, D. C., Surgeon-General's Office, from Camp Sherman, Capt. T. Z. CASON, Jacksonville.

Georgia

To Fort McPherson, Ga., from Camp Dix, Lieut. J. E. MORRISON, Savannah; from Camp Jackson, Capt. T. J. COLLIER, Atlanta.

To Washington, D. C., and on completion *to Fort McPherson, Ga.*, from Camp Dix, Major E. V. KELLER, Atlanta.

Illinois

To Arcadia, Fla., Carlstrom Field, as assistant flight surgeon, from Millington, Tenn., Capt. D. R. SCOTT, Macomb.

To Camp Sherman, Ohio, base hospital, from Camp Custer, Lieut. M. J. KOSTRZEWSKI, Chicago.

To Chicago, Ill., from Camp Custer, Capt. P. M. CLIVER, Chicago.

To Fort Des Moines, Iowa, from Rockefeller Institute, Lieut. K. W. WAHLBERG, Moline.

To Fort Sam Houston, Texas, from Ann Arbor, Capt. O. T. ROBERG, Chicago.

To Fort Sheridan, Ill., from Camp Custer, Lieut. J. W. MILLER, Chicago; from Camp Dix, Major M. HANCHETT, Lieuts. B. R. PAR-

KER, W. A. TAYLOR, Chicago; from Fort Des Moines, Lieut. L. COLE, Oak Park; from Hoboken, Major L. J. POLLOCK, Chicago.
To report to the commanding general, Southern Department, from South San Antonio, Capt. C. M. ROBERTSON, Chicago.
To Sparta, Wis., from Indianapolis, Major O. YARNELL, Decatur.
To Walter Reed General Hospital, D. C., from Camp Jackson, Lieut. J. STERN, Chicago. For instruction, and on completion *to Colonia, N. J.*, from Rockefeller Institute, Lieut. D. C. SIGWORTH, Chicago.
To Williamsbridge, N. Y., from Chicago, Capt. G. C. TALLERDAY, Chicago.
The following orders have been revoked: *To Camp Crane, Pa.*, from Hoboken, Lieut. J. T. MEYER, Chicago. *To Fort Oglethorpe* for instruction, Capt. P. GRONNERUD, Chicago.

Indiana

To Camp Abraham Eustis, Va., camp hospital, from Fort Sam Houston, Lieut. C. E. QUINN, Burlington.
To Fox Hills, N. Y., from Fort Sam Houston, Lieut. L. C. SAMMONS, Shelbyville.
To Fort Sheridan, Ill., from Camp Dix, Capt. L. J. QUILLIN, Warsaw.
To report to the commanding general, Hawaiian Department, from Fort Riley, Lieut. J. C. ROSS, Gas City. Philippine Department, from Fort Sheridan, Major O. A. NEWHOUSE, Montezuma.
To Walter Reed General Hospital, D. C., from Camp Custer, Capt. E. H. KATTERHENRY, Indianapolis.

Iowa

To Eastview, N. Y., from Hoboken, Lieut. M. J. FITZPATRICK, Mason City.
To Fort Des Moines, Iowa, from Camp Dix, Capt. A. B. PHILLIPS, Clear Lake.
To Fort Sheridan, Ill., from Fort Des Moines, Lieut. F. C. NILSSON, Laurens.

Kansas

To Fort McHenry, Md., from Camp Dix, Capt. C. W. ZUGG, Great Bend.
To Fort Riley, base hospital, from Camp Dix, Capt. M. TRUEHART, Sterling.
To Fox Hills, N. Y., from Camp Dix, Major H. WILKINSON, Kansas City.

Kentucky

To Camp Zachary Taylor, Ky., base hospital, from Hampton, Capt. S. D. WETHERBY, Middletown; from Camp Dix, Capt. O. P. HODGE, Grants Lick; from Walter Reed General Hospital, Lieut. T. M. DORSEY, Louisville.
To Washington, D. C., and on completion *to Biltmore, N. C.*, from Rockefeller Institute, Lieut. J. H. HAESSLER, Louisville.

Louisiana

To Camp Shelby, Miss., as tuberculosis examiner, from Camp Bowie, Lieut. B. R. HENINGER, New Orleans.
To Eastview, N. Y., from Camp Dix, Lieut.-Col. T. P. LLOYD, Shreveport.
The following order has been revoked: *To Camp Beauregard*, base hospital, Capt. T. E. WRIGHT, Monroe.

Maine

To Camp Devens, Mass., as tuberculosis examiner, from Camp Wadsworth, Capt. C. R. O'BRIEN, Bangor.
To Whipple Barracks, Ariz., from West Baden, Lieut.-Col. R. V. BLISS, Bangor.

Maryland

To Camp Wadsworth, S. C., from Camp Jackson, Lieut. W. A. BRIDGES, Towsen.
To Fort McHenry, Md., from Camp Dix, Lieut. C. A. REIFSCHNEIDER, Baltimore.
To Fox Hills, N. Y., from Camp Lee, Lieut. H. B. RICHARDSON, Baltimore.
To Walter Reed General Hospital, D. C., from Camp Shelby, Lieut. D. F. ELMENDORF, Baltimore.
To Washington, D. C., Surgeon-General's Office, from Hoboken, Col. T. R. BOGGS, Baltimore.

Massachusetts

To Boston, Mass., from Camp Dix, Capt. J. J. STACK, Boston.
To Camp Devens, Mass., from Camp Dix, Major E. A. COATES, Jr., Chelsea.
To Camp Grant, Ill., base hospital, from Camp Hancock, Capt. A. N. BALL, Northampton.
To Camp Joseph E. Johnston, Fla., from Boca Grande, Fla., Lieut.-Col. W. J. MIXTER, Boston.
To Camp Meade, Md., base hospital, from Camp Dix, Lieut.-Col. J. W. LANE, Boston. *To examine the command* for cardiovascular diseases, from Camp Custer, Capt. G. M. ALBEE, Worcester.
To Lakewood, N. J., from New Haven, Lieut. A. G. C. SCHNACK, Cambridge.
To Newport News, Va., from Camp Meigs, Capt. M. M. JORDAN, Westboro.
To Walter Reed General Hospital, D. C., from Lakewood, Lieut. C. C. STURGIS, Boston.
To Washington, D. C., Surgeon-General's Office, from Hoboken, Col. F. A. WASHBURN; from Newport News, Lieut.-Col. L. B. BRIGGS, Boston.
The following orders have been revoked: *To Camp Sevier, S. C.*, base hospital, from Camp Sherman, Capt. G. L. VOGEL, Boston. *To Camp Shelby, Miss., to examine the command* for nervous and mental diseases, from Camp Sheridan, Lieut. C. B. PARTINGTON, Framingham.

Michigan

To Camp Grant, Ill., as orthopedic surgeon, from Camp Custer, Capt. H. W. LONG, Escanaba.
To St. Louis, Mo., from Williamsbridge, Capt. J. S. BROTHERHOOD, Grand Rapids.
The following order has been revoked: *To Fort Logan H. Roots, Ark.*, from Camp Beauregard, Lieut. R. G. KARSHNER, Big Rapids.

Minnesota

To Fort Sheridan, Ill., from Camp Dix, Capt. A. E. COMSTOCK, St. Paul.
To Fort Snelling, Minn., from Camp Meade, Lieut. H. W. STONE, Minneapolis; from Hoboken, Lieut. P. A. WARD, Minneapolis.
To report to the commanding general, Southern Department, from South San Antonio, Capt. J. C. WILKINSON, Red Lake Falls.
To Washington, D. C., Surgeon-General's Office, from Rochester, Major D. L. WINN.

Missouri

To Fort Sheridan, Ill., from Camp Dodge, Capts. H. D. HAMILTON, Kansas City; L. S. LUTON, St. Louis; from Camp Travis, Capt. H. C. CREVELING, St. Louis.
To Fox Hills, N. Y., from Camp Dix, Capt. E. K. DIXON, St. Louis.
To St. Louis, Mo., from Camp Dix, Lieut. O. F. FLADER, St. Louis; from Fort McHenry, Capt. F. J. TAINTER, St. Charles; from Fort Sheridan, Capt. C. A. LEAVY, St. Louis.
To Walter Reed General Hospital, D. C., from New York, Major G. E. SCRUTCHFIELD, Marshall.
To Washington, D. C., Surgeon-General's Office, from Camp Lewis, Capt. R. L. RUSSELL, Humansville.
The following order has been revoked: *To Camp Fremont, Calif.*, Lieut. A. B. JONES, Shackleford.

Montana

To Camp Jackson, S. C., base hospital, from Biltmore, Lieut. G. A. LEWIS, Roundup.
To Fox Hills, N. Y., from Long Beach, Lieut. G. F. TURMAN, Missoula.
To report to the commanding general, Hawaiian Department, from Fort Riley, Capt. J. H. RIFFEY, Hedgesville.
The following order has been revoked: *To Fort Des Moines, Iowa*, from Camp Meade, Capt. A. G. FULLER, Missoula.

Nebraska

To Fort Omaha, Neb., from Fort Monroe, Capt. G. R. GILBERT, Omaha.
To Metuchen, N. J., Raritan Arsenal, from Fort McHenry, Major S. R. HOPKINS, Hastings.

New Hampshire

To Fort McHenry, Md., from Camp Devens, Capt. C. F. NUTTER, Nashua.

New Jersey

To Camp Bowie, Texas, base hospital, from Camp Dix, Major F. W. PINNEO, Newark.
To Camp Dix, N. J., from Lawrenceville, N. J., Capt. C. BROWNE, Princeton.
To Camp Meade, Md., base hospital, from Camp Dix, Major H. D. BELLIS, Trenton.
To Fort Bayard, N. M., from Camp Dix, Lieut. G. B. FLETCHER.
To Pittsburgh, Pa., from Fort Sheridan, Lieut. R. D. VREELAND, Passaic.
To Washington, D. C., Surgeon-General's Office, from Hoboken, Lieut.-Col. J. R. MOUNT.

New York

To Arcadia, Fla., Carlstrom Field, from Everman, Texas, Major S. M. STRONG, New York.
To Camp Dix, N. J., from Camp A. A. Humphreys, Lieut. K. N. BOSTANIAN, New York; from Pedericktown, N. J., Lieut. G. FLAMM, Oneida. On completion *to New York*, Bellevue Hospital, from Hoboken, Major J. A. HARTWELL, New York.
To Fort McHenry, Md., from Camp Dix, Major I. W. LIVERMORE, Gowanda; from Walter Reed General Hospital, Major A. H. PARSONS, Great Neck.
To Fort Sill, Okla., Post Field, from Everman, Texas, Capt. W. A. SCRUTON, New York.
To Fort Slocum, N. Y., from Camp Dix, Lieut. S. MORSE, New York.
To Fort Thomas, Ky., from Camp Upton, Col. C. P. ROBBINS.
To Fox Hills, N. Y., from Camp Dix, Capt. H. R. KUTIL, New York; from Fort Sill, Lieut. M. B. SHARKEY, Syracuse; from Hoboken, Major F. HARNDEN, Brooklyn.
To Hampton, Va., Langley Field, as sanitary inspector, from Camp Shelby, Lieut. L. M. ROHR, Brooklyn.
To Hoboken, N. J., from Camp A. A. Humphreys, Capts. M. F. HEALY, P. S. SABINE, New York; from Camp Dix, Capt. F. T. OWENS, Utica; from Camp Upton, Lieut.-Col. E. GOLDSTEIN, Brooklyn; from Long Beach, Major C. D. NAPIER, Brooklyn.
To Lakewood, N. J., from Army Medical School, Lieut.-Col. A. H. CILLEY, New York; from New Haven, Lieuts. R. E. CUMMINGS, New York; T. M. CALLADINE, Jr., Perry. For instruction, and on completion *to St. Louis, Mo.*, from Walter Reed General Hospital, Major R. A. KINSELLA, New York.
To Newport News, Va., from Hoboken, Lieut. H. W. KEMP, Brooklyn.
To New York, from Fort McPherson, Lieut. M. I. ROVEN, New York.
To Pittsburgh, Pa., from Camp Dix, Capt. J. J. SINNOTT, Mount Vernon.
To Jefferson Barracks, Mo., from Camp Dix, Major J. F. W. MEAGHER, Brooklyn; Capt. W. C. DICKINSON, Oneonta; from Fort Benjamin Harrison, Capt. C. C. CORYELL, New York; from Fox Hills, Lieut.-Col. A. VON SCHRADER; from Long Beach, Major W. A. CONLON, Central Islip.
To report to the commanding general, Western Department, from Camp Fremont, Capt. C. M. MEYER, New York.
To Schenectady, N. Y., from Camp Hancock, Capt. G. W. WILLCOX, Hamilton.
To St. Louis, Mo., from Long Beach, Lieut. S. TRIPLER, Oswego.
To Walter Reed General Hospital, D. C., from Camp Meade, Capt. R. G. SNYDER, New York.
To Washington, D. C., Surgeon-General's Office, from Camp Hancock, Lieut.-Col. F. J. BARRETT, New York; from Hoboken, Lieut.-Col. H. ZINSSER, New York.
The following orders have been revoked: *To Fort Oglethorpe* for instruction, Lieut. R. G. HAYS, Brooklyn. *To Pittsburgh, Pa.*, from Camp Dix, Lieut. H. J. McDONALD, Buffalo.

North Carolina

To Camp Jackson, S. C., base hospital, from Camp Dix, Capt. C. GARRENTON, Bethel.
To Walter Reed General Hospital, D. C., from Lakewood, Lieut. J. T. WEARN, Charlotte.

Ohio

To Camp Sherman, Ohio, as tuberculosis examiner, from Camp Dodge, Capt. W. T. SPRAGUE, Athens.
To Camp Upton, N. Y., base hospital, from Hoboken, Lieut. L. S. KEMP, Canton.
To Hoboken, N. J., from Eastview, Capt. F. M. BURNS, Cincinnati.
To Lakewood, N. J., from New Haven, Lieut. I. B. SMOCK, Canton.
The following order has been revoked: *To Rantoul, Ill.,* Chanute Field, from Everman, Texas, Lieut. J. T. McBRIDE, Dayton.

Oklahoma

To Biltmore, N. C., from Camp Jackson, Major L. L. BUNKER, Enid.
To Fort Des Moines, Iowa, from Camp Dix, Major R. V. SMITH, Tulsa.
To Fort Sam Houston, Texas, from Camp Dix, Lieut. A. G. HUNT, Howe.
To Kearney, N. J., from Fort Caswell, Lieut. H. C. BRADLEY, Oklahoma City.
To report to the commanding general, Southern Department, from South San Antonio, Capt. S. E. MITCHELL, Stigler; Lieut. H. C. SCHENCK, Muskogee.
The following order has been revoked: *To Camp Jackson, S. C.,* base hospital, from Biltmore, Capt. R. E. RUNKLE, El Reno.

Oregon

To Washington, D. C., Surgeon-General's Office, from Camp Dix, Capt. L. SELLING, Portland.
The following order has been revoked: *To Fort McHenry, Md.,* from Hoboken, Major J. M. WAUGH, Hood River.

Pennsylvania

To Camp Dix, N. J., from Madison Barracks, Major J. W. BAUMAN, Lansdale. As tuberculosis examiner, from Army Medical School, Capt. R. L. ENGLE, Philadelphia.
To Camp Meade, Md., from Camp Grant, Capt. H. L. W. WIGNALL, Pittsburgh.
To Governors Island, N. Y., from Madison Barracks, Lieut. J. A. COEN, Bristoria.
To Hoboken, N. J., from Camp Dix, Capt. R. C. FAGLEY, Kulpmont; from Camp Jackson, Lieut. O. H. BINKLEY, Pittsburgh.
To Houston, Texas, Ellington Field, from Dallas, Lieut. C. R. BRENNER, Pittsburgh.
To New Haven, Conn., from Camp Dix, Lieut. J. A. BUCHANAN, Stricklersville.
To Philadelphia, Pa., from Camp Dix, Major D. P. WILLARD, Philadelphia; Capt. H. C. EARNSHAW, Bryn Mawr.
To Pittsburgh, Pa., from Camp Dix, Lieuts. J. H. KREIDER, Harrisburg; J. A. CUOZZO, Hazleton.
To Roland Park, Md., from Baltimore, Capt. C. R. EASSICK, Reading.
To San Francisco, Calif., Letterman General Hospital, from Camp Fremont, Capt. E. E. JOHNSON, Norristown.
To Walter Reed General Hospital, D. C., for instruction, from Metuchen, Lieut. C. L. McCOY, Pittsburgh. On completion *to Fort McHenry, Md.,* from Rockefeller Institute, Lieut. W. F. WHITE, Wellsboro.
To Washington, D. C., Surgeon-General's Office, from Fort Sam Houston, Lieut. W. H. HAINES, Philadelphia.
The following orders have been revoked: *To Fort Oglethorpe* for instruction, Lieut. J. A. WEIRBACH, Quakertown. *To Washington, D. C.,* from Newport News, Major R. S. McCOMBS, Philadelphia.

Philippine Islands

To Camp Custer, Mich., from San Francisco, Major H. L. FREELAND, Manila.

Porto Rico

To San Diego, Calif., from Southwestern Department, Major E. I. VAUGHN, Central Aguirre.

Rhode Island

To Camp Dix, N. J., as tuberculosis examiner, from Otisville, Lieut. W. B. DAVIDSON, Pawtucket.
To Walter Reed General Hospital, D. C., for instruction, and on completion *to Camp Meade, Md.,* from Rockefeller Institute, Lieut. J. E. McCABE, Providence.

South Dakota

To Fort Snelling, Minn., from Camp Custer, Capt. W. A. BATES, Northville.
To report to the commanding general, Southern Department, from South San Antonio, Lieut. J. H. CRAWFORD, Castlewood.
The following order has been revoked: *To Fort Oglethorpe* for instruction, Lieut. O. B. SHEETS, Carthage.

Tennessee

To Camp Lee, Va., base hospital, from Camp Jackson, Capt. J. E. LACY, Jasper.
To Newport News, Va., from Camp Fremont, Lieut. G. T. WILHELM, Memphis; from Fort McPherson, Capt. G. A. HATCHER, Nashville.
To Philadelphia, Pa., from Camp Joseph E. Johnston, Capt. J. F. MASSEY, Fountain City.
To Schenectady, N. Y., from Camp Hancock, Lieut. E. E. BYRD, National Soldiers Home.

Texas

To Camp Sheridan, Ala., base hospital, from Camp Jackson, Capt. L. E. HASTINGS, Dallas.
To Camp Travis, Texas, from Camp A. A. Humphreys, Lieut. E. O. ARNOLD, Corpus Christi.
To Houston, Texas, Ellington Field, from Dallas, Capt. L. C. G. BUCHANAN, Big Springs; Lieut. J. T. COLWICK, Dallas.
To report to the commanding general, Central Department, from Denver, Capt. L. O. DUDGEON, Sweetwater. Southern Department, from South San Antonio, Lieut. S. C. APPLEWHITE, San Antonio.
The following order has been revoked: *To Lakewood, N. J.,* from Fort Oglethorpe, Lieut. W. R. MOORE, Spur.

Virginia

To Camp Grant, Ill., base hospital, from Camp Lee, Lieut. J. B. FITTS, Richmond.
To Pittsburgh, Pa., from Camp Jackson, Lieut. D. S. DIVERS, Roanoke.

Washington

To Fort Snelling, Minn., from Army Medical School, Lieut.-Col. J. C. GRAVES, Jr., Spokane.

Wisconsin

To Camp Lee, Va., as orthopedic surgeon, farom Fort Sheridan, Lieut. J. D. GILLIS, Wauwatosa.
To Camp Sherman, Ohio, base hospital, from Camp Custer, Lieut. H. C. SALTZSTEIN, Milwaukee.
To Fort Sheridan, Ill., from Camp Dix, Major R. KAYSEN, Plymouth.
To Pittsburgh, Pa., from Camp Custer, Lieut. F. NEE, Spring Green.

Wyoming

To Fort Snelling, Minn., from Chicago, Lieut. E. E. DALE, Lusk.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Personal.—Dr. Wheeler S. McCall, Blytheville, has recently returned after service in France.

Public Health Service Discontinued.—The city council of Little Rock has received notices from the United States Public Health Service that the government will close the station at Little Rock about June 30, on account of there being no funds available for the continuance of the work. The Red Cross activities will also be discontinued on the same date because of the lack of funds. This work has been carried on under the following heads: malaria control, communicable disease control, venereal disease control, school inspection, public health nursing, control over production and sale of milk and milk products, control over preparation and sale of foods and drinks, control over slaughtering and sale of meats, control over barber shops and manicure parlors, sanitary inspection and sanitation, rural sanitation, laboratory, publicity, education, and general health work not included under the foregoing heads.

CALIFORNIA

Physicians Lose Licenses.—The state board of medical examiners, March 21, is reported to have revoked the medical licenses held by Drs. James Ottis, Burnette and George H. Richardson, Los Angeles, charged with having performed illegal operations.

Lane Lecture.—The sixth popular medical lecture under the auspices of the medical faculty of Leland Stanford Junior University, San Francisco, was delivered, March 31, at Lane Hall, by Dr. William C. Hassler, San Francisco, who spoke on "The Control of Epidemics."

Correction.—In the California news which appeared in THE JOURNAL, March 22, it was stated that Dr. Slocomb R. Edwards had been appointed chief of the ear, nose and throat department of Leland Stanford Junior University. Dr. Edwards notifies THE JOURNAL that this is an error, as his appointment is as assistant to Dr. Edward C. Sewell, San Francisco, chief of the Lane Ear, Nose and Throat Clinic of Stanford University.

Personal.—Dr. Timothy Lyman, Sacramento, has resigned as superintendent of the Sacramento County Hospital, and located in Eau Claire, Wis.——Dr. Thomas B. W. Leland, formerly Surgeon, Lieut.-Com., U. S. Navy, and senior medical officer of the Second Division of the Pacific Fleet, and coroner of San Francisco County, has been discharged from the service.——Dr. William J. Galbraith, Burbank, has been appointed district surgeon for the Southern Pacific System. ——Dr. George H. Sciaroni, Fresno, has been placed in charge of the social disease clinic to be established at the Fresno City Hospital.

GEORGIA

Healthology.—The bulletin of Georgia State Board of Health has been made a monthly instead of a quarterly publication, and Roy C. Werner, B.S., has been appointed its editor.

Personal.—Dr. Charles R. Bullock, Kirkwood, Capt., M. C., U. S. Army, on duty with the Seventh Division overseas, has been promoted to Major, M. C.——Edwin S. Byrd, Capt., M. C., U. S. Army, Atlanta, who went overseas in September, 1918, has been honorably discharged from the service and has taken up practice in Moultrie.

IDAHO

New Tuberculosis Hospitals.—March 14, Governor Davis signed House Bill No. 117, passed by the legislature, which authorizes a tax levy to provide funds for the establishment of two tuberculosis hospitals in the state.

Personal.—Frederick T. Harris, Capt., M. C., U. S. Army, Lewiston, who has been in France for about eight months, has been promoted to Major, M. C., U. S. Army.——Johan Christian Wilk, Capt., M. C., U. S. Army, Moscow, has been promoted to Major, M. C.——Joseph Aspray, Capt., M. C., U. S. Army, Moscow, who has been serving overseas, has returned, received an honorable discharge, and resumed practice.——Dr. Fred A. Pittenger, Boise, has been appointed physician to the soldiers' home.

ILLINOIS

Full-Time County Superintendent.—The draft of a bill was completed, April 2, under the direction of Dr. C. St. Clair Drake, Springfield, director of health, which provides a full-time health superintendent for each county in Illinois at a salary of not less than $1,800 a year.

Medical Society Reorganized.—Physicians of Williamson County met in Marion, March 13, to reorganize the Williamson County Medical Society, and elected the following officers: president, Dr. Dallas S. Boles, Herrin; vice president, Dr. Edward E. Woodside, Marion, and secretary-treasurer, Dr. Joseph G. Parmley, Marion.

Orthopedic Clinics for Deformed.—Clinics are now being held in sixteen of the principal cities of Illinois for the free relief of children from various deformities and physical defects. The work is being done under the direction of the child hygiene department of the state, of which Dr. Clarence W. East, Springfield, is in charge.

Chiropractors Fined.—Miss Clara Kaep, a chiropractor of Rockford, was arrested by an inspector of the Department of Registration and Education of the State of Illinois for practicing without a license, and was fined $25 and costs.——J. C. Shrock, a chiropractor of Verdun, was arrested by the department of registration and education, and fined $50 for practicing medicine without a license.

Personal.—Dr. James W. MacDonald has been elected first president of the Union League Club, Aurora.——Dr. C. St. Clair Drake, Springfield, director of the state department of public health, delivered an address before the Illinois Academy of Science at Jacksonville on "The Effect of the War on Science, and the Responsibility and Opportunities of Science under the New Order of Things—Medicine and Public Health."——Drs. William Barnes, Clare A. Garber, Charles E. Hildreth and Robert L. Morris have been appointed members of the board of directors of the department of social hygiene of Decatur. This department will have charge of the free venereal clinic which is to be opened at the Decatur and Macon County Hospital.

Chicago

Loyola Faculty Changes.—Dr. Bertha Van Hoosen has been appointed professor and acting head of the department of obstetrics; Dr. Louis D. Moorhead has been appointed secretary of the faculty; Dr. George W. Wilson, of the Rockefeller Institute, professor and head of the department of pathology, bacteriology and preventive medicine; Ruben Myron Strong, Ph.D., formerly professor and head of the department of anatomy at Vanderbilt University, Nashville, Tenn., has accepted a similar position, and Dr. Thesle T. Job, of the University of Iowa, Iowa City, and Dr. Alden B. Dawson, formerly of Harvard, have been appointed assistant professors of anatomy, in Loyola University School of Medicine.

Personal.—Dr. Joseph L. Miller, Lieut.-Col., M. C., U. S. Army, has returned from military service and resumed practice.——Albert B. Yudelson, assigned to duty at the Hôpital La Fouche for a year, has returned and resumed practice.——Dr. Thomas A. Woodruff announces his removal to New London, Conn.——Harry E. Mock, Lieut.-Col., M. C., U. S. Army, has been selected as one of the delegates for the United States at the Interallied Reconstruction Congress to meet in Rome, next month.——Henry F. Lewis, Major, M. C., U. S. Army, has returned to Chicago and resumed practice.——Dr. Ethan A. Gray has been appointed medical member of the District Case Board of the Federal Board for International Education, Eighth District, which comprises Illinois, Wisconsin and Michigan.——J. W. Vanderslice, Capt., M. C., U. S. Army, has returned to Chicago and resumed practice.

Base Hospital Returns.—Under command of Major Payson L. Nusbaum, 146 men of Base Hospital No. 12, the Northwestern University Base Hospital Unit, reached New York on the *Leviathan*, April 2. The unit is to be demobilized at Camp Grant after a short preliminary stay at Camp Mills. Among the officers in the home-coming group are Majors Herbert B. Woodard, Martin R. Chase, Toulon, Walter H. Nadler, Summer L. Koch and Charles W. Freeman; Capts. Joseph J. Lebowitz, John T. B. Bird, Walter L. Stranberg, Hillier L. Baker, Charles E. Lindsay, Willis S. Gibson, Robert W. Eaton, Cyril J. Glaspel, John Henkin, Erying O. Ravn, Lyman A. Copps, Alexander H. Barnett, Edwin Robert Talbot, Willis C. Strange, Stanley W. Clark and Charles A. Short, and Lieuts. Clarence W. Robertson, Walter S. Sieworth, William Henry Johnson and Elmer C. Roberts, M. C., U. S. Army.

INDIANA

Personal.—Dr. George R. Andrews, Muncie, who has been seriously ill, is reported to be improving.——Dr. Arthur F. Fagaly, Lawrenceburg, has been reappointed a member of the Dearborn County Board of Health.

District Society Meeting.—The Thirteenth District Medical Society at its meeting held in Goshen, March 20, reelected Dr. John C. Fleming, Elkhart, president; Dr. Samuel C. Loring, Plymouth, vice president, and Dr. Charles C. Dubois, Warsaw, secretary.

Physicians Convicted.—Dr. George Koons, Indianapolis, is reported to have been found guilty of violation of the Harrison Narcotic Law and to have been fined $25 and costs and given a suspended sentence of ninety days in jail.——Robert Clark, Batesville, who pleaded guilty in Bartholomew Circuit Court to the charges of practicing medicine without a license, is said to have been fined $200 and costs and sentenced to imprisonment at the state farm for 200 days.

IOWA

Children's Hospital Opened.—The new Children's Hospital at the University of Iowa, Iowa City, was informally dedicated, March 23. The building has cost $150,000 and is constructed in pavilion style. The administrative section is two stories in height, the upper rooms being used as quarters for interns, and is connected by corridors with the orthopedic and pediatric wards. The institution will accomodate about 100 patients.

Personal.—Wilbur S. Conkling, Major, M. C., U. S. Army, Des Moines, commanding officer of the 117th Sanitary Train, 42d Division, and stationed at Neuenahr, Germany, has been promoted to lieutenant-colonel, M. C.——Lee E. Shafer, Lieut., M. C., U. S. Army, Walcott, has returned after fifteen months' service with the American Expeditionary Forces in France.——Charles L. Patterson, Capt., M. C., U. S. Army, Westside, has returned after eleven months in France.——Dr. William J. Egloff, Mason City, who has been seriously ill, has recovered.——Dr. Peter E. James, Elk Horn, who has been in ill health for a long time, has left for California.——Dr. Floyd B. Langdon, Des Moines, has resigned as physician of Polk County.

LOUISIANA

Personal.—John B. Elliott, Jr., and J. Birney Guthrie, Capts., M. C., U. S. Army, both of New Orleans, have returned from France.

Hospital Unit Homeward Bound.—The Loyola Hospital Unit, made up of approximately 300 New Orleans men and women, which sailed for France, July 10, 1918, sailed from Genoa for the United States, March 29. The organization is commanded by Joseph A. Danna, Lieut.-Col., M. C., U. S. Army, and William W. Leake, Major, M. C., U. S. Army, is head of the surgical division of the unit.

Medical Staff for Venereal Clinic.—Dr. Oscar Dowling, president of the state board of health, announces the following appointments on the medical staff of the Venereal Hospital and Clinic at Alexandria, which is maintained by the parish of Rapides, and the city of Alexandria, and the United States Public Health Service, under the charge of Dr. Charles

M. Abbott, Ponchatoula: Dr. Mayer A. Newhauser, New Orleans, chief of the clinic; Mr. J. H. O'Neill, sanitary engineer and assistant director for the state board of health, and J. D. Lobanhoffer, chief of the laboratory.

MARYLAND

Personal.—Dr. Martin F. Sloan, superintendent of Eudowood Sanitarium, Towson, has left for his home in San Antonio, Texas.

Lectures on Motherhood.—The first of a series of public lectures on the problems of "Motherhood" was given by Dr. J. Whitridge Williams, Baltimore, of the Johns Hopkins University, in the lecture room of the School of Hygiene and Public Health, April 3. In the lectures, which are for the education, advancement and protection of motherhood, Dr. Williams will deal with marriages, the health of mothers, unwholesome causes affecting the birth rate of the present age, care and health of babies, and educational equipment necessary for handling the problem of motherhood. The lectures, which are free to women of Maryland, are the result of the Child Welfare Drive conducted by the Women's Section of the Maryland Council of Defense, in cooperation with the Children's Bureau of the government.

Appropriation to Take Care of Insane Soldiers.—The problem of taking care of the state's insane soldiers was solved recently by the action of the executive committee of the Maryland Council of Defense in appropriating $25,000 for that purpose. Since all the hospitals for the insane in the state are crowded, the only way accommodations can be provided for soldiers is by equipping the building at the Spring Grove State Hospital, known as the Arthur D. Foster Psychopathic Building. The need of these facilities is urgent; and now that the amount necessary to complete the building has been appropriated, work will be begun immediately and the building will be ready for occupancy by July 1. The government has arranged to pay the maintenance for the patients, provided the state will provide housing accommodations.

MINNESOTA

Personal.—Dr. Ignatius J. Murphy, St. Paul, has resigned as assistant secretary of Minnesota Public Health Association to take up postgraduate work in Boston.——Dr. Bernard J. Gallagher, Lieut., M. C., U. S. Army, Waseca, who was attached to the British army, captured at the Battle of the Somme and imprisoned at Villingen, Germany, delivered an address at the noonday meeting of the Hennepin County Medical Society, April 2.——John C. Staley, Major, M. C., U. S. Army, St. Paul, on duty with Base Hospital No. 25 at Nantes, France, has been promoted to Lieut.-Col., M. C.——Leonard G. Rowntree, Lieut.-Col., M. C., U. S. Army, chief of the Department of Medicine of the University of Minnesota Medical School, has returned from abroad.

MONTANA

Personal.—Ellis A. Johnston, Capt., M. C., U. S. Army, Helena, has returned after a year of service with the American Expeditionary Forces in France.

County Health Officer.—The commissioners of Gallatin County met at Bozeman, March 31, and agreed to cooperate with the local authorities and establish a health organization under the charge of a whole-time health officer. It is understood that Bozeman will pay one third of the expense of the department.

Health Talks to Boys.—Arrangements have been completed with the state board of health in cooperation with the United States Public Health Service working with the Young Men's Christian Association and local speakers to give lectures to boys of 14 years and over in the public schools of the state, on the evils of venereal disease and the importance of keeping fit.

NEW YORK

Clean Up Week.—In a letter to mayors, village presidents and boards of health, Dr. Hermann M. Biggs, state commissioner of health, designates the week beginning April 14 as the annual clean up week. The local authorities are requested to take steps to notify all citizens of the date and the purpose of Clean Up Week, and are also urged to make arrangements for the proper disposal of all refuse collected during the week.

Uniform Budget Systems.—A uniform budget system has been prepared by the state department of health, the state comptroller, the New York State Conference of Mayors and certain other city officials for the use of second and third class cities. This is now being sent to health officers. In addition to the budget there is a uniform departmental accounting system which has been planned for health officers. It is believed that the uniform budget system will not only be useful to the cities for which it is intended but will also be of value to the health officers of consolidated districts as well as of all the larger villages of the state. It is being sent to all such officials.

Amendments to Sanitary Code.—The following amendments to the Sanitary Code, adopted by the Public Health Council of the New York State Department of Health went into effect, March 1:

In regulation 36 of Chapter 11 the following paragraph was inserted: "Typhoid or paratyphoid fever, if the patient's occupation involves the handling of milk, dairy products, or other food, until all signs of the disease, or secondary or complicating infections incited by the agents of these diseases, have disappeared, and until two successive specimens of the intestinal discharges of the patient have been taken at an interval of not less than seven days and have been examined in a laboratory approved by the state commissioner of health and found to be free from typhoid or paratyphoid bacilli."

Regulation 13 relating to the delivery of milk has been amended to read: "Such milk must be delivered within thirty-six hours after pasteurization between April first and November first and within forty-eight hours after pasteurization, between November first and April first, and such cream within forty-eight hours after pasteurization, unless a shorter time is prescribed by the local health authorities."

The resolution regarding the qualifications of Public Health Nurses requiring that these nurses be 21 years of age and registered at the time of their appointment has been repealed.

The following regulation on shaving or lather brushes has been added: "No shaving or lather brush shall be manufactured, offered for sale, or used unless the hair or bristles thereof shall have been so treated for the purpose of destroying anthrax germs as to conform with the regulations of the state commissioner of health."

New York City

Personal.—Dr. Royal S. Copeland, commissioner of health, has issued a statement announcing his intention to resign "within a reasonable length of time," that is, after the mayor has had an opportunity to choose a successor for the office.——Dr. Simon Flexner, director of laboratories of the Rockefeller Institute for Medical Research, has been elected an associate member of the Paris Biological Society.

Community Health Committee.—At a meeting of the Community Councils for National Defense held, April 5, under the chairmanship of Dr. Lee K. Frankel, a health community council was appointed to bring health questions clearly before the people. The committee includes Drs. S. Josephine Baker, John W. Brannan, Henry Dwight Chapin, Sigismund S. Goldwater, Louis I. Harris, L. Emmett Holt, E. H. Lewinski-Corwin, Ralph Waldo Lobenstine, Frederick Peterson, Thomas A. Storey, Simon Tannenbaum, Herbert B. Wilcox, and Thomas D. Wood and a number of men and women interested in public health work.

Revision of the Workmen's Compensation Act.—At a special meeting of the executive committee of the Physician's Protective Association at New York, April 2, resolutions were adopted setting forth the fact that the governor has demanded immediate revision of the workmen's compensation act, to protect direct settlement between indigent employees and insurance carriers, and calling the attention of the governor and legislature to a similar condition relating to the payment of physicians' fees by the insurance companies, owing to the impotency of the provisions of the workmen's compensation law either to provide a proper fee for medical service or to compel the payment of the fee awarded by the commission against the insurance companies, and urging that the governor include in his proposed revision of the workmen's compensation law a remedy for this form of injustice to the medical profession.

Report of Public Health Committee.—The report of the principal activities of the Public Health Committee of the New York Academy of Medicine for the year 1918 has been submitted to the academy by the secretary of the committee, Dr. James Alexander Miller. Among the subjects which have engaged the attention of the committee and on which opinions have been expressed and advice offered are included: malnutrition among schoolchildren; drug addiction; industrial diseases; reorganization of the city department of health; chief medical examiner; harbor pollution; nursing problem; dispensaries; influenza, and city budget. A number of miscellaneous subjects were also submitted to the committee for special inquiry and study, among which were ventilation in institutions for children, the mortality of women from puerperal causes, the home hospital experiment for tuber-

culous families, community councils, the control of venereal diseases, the medical problems of the Home Service Section of the American Red Cross, physical training of schoolchildren, and the situation in reference to garbage removal.

Bill Providing Care for Tuberculous.—A bill introduced into the legislature by Senator Julius Miller, and carrying an initial appropriation of $1,000,000, provides for state and county aid in the treatment of poor persons suffering from tuberculosis. According to the terms of this bill the state should pay one third, the county one third, and the patient himself, or through funds supplied from private sources, one third of the cost of care and treatment. Local health authorities are required to make a survey of their districts and report to the state health department a list of private institutions, boarding houses or dwellings in their districts suitable to receive and care for tuberculous persons. The state health department, after investigation, is to certify a list of such places in different parts of the state and to maintain a system of inspection after these have begun to operate under health department license. The state and county aid would continue as long as the local authorities deem treatment necessary, but in no event more than a year. The plan provides only for patients who are not bedridden or in need of bedside care or nursing. The state department of health is authorized to fix uniform rates for board and lodging in licensed places. A person must be a citizen of the United States and must have resided in New York State for one year to come in under the benefits of this plan.

NEBRASKA

Sectarian Bill Postponed.—The state senate recently postponed indefinitely Senate Bill No. 190, which provided for the establishment of a department of eclectic and a department of homeopathic medicine in the University of Nebraska College of Medicine, Omaha. This bill was fostered by the State Eclectic Medical Society, and this legislature is the third to defeat a measure of like character.

Personal.—Roy Johnson, Lieut., M. C., U. S. Army, Holdrege, returned, March 26, from overseas service.——R. Allyn Moser, Lieut., M. C., U. S. Army, Omaha, who was on duty with the British Army in France and later with the American Expeditionary Forces, has returned from abroad.——Dr. Samuel J. Stewart, Hastings, has been appointed a member of the advisory board to the state board of health, succeeding Dr. William T. Johnson, Pawnee City, deceased.——Dr. Frederick A. Sedlacek, Omaha, is a member of the American Red Cross Commission to Serbia which sailed from San Francisco, March 25.

NORTH CAROLINA

State Society Meeting.—The annual meeting of the Medical Society of the State of North Carolina will be held, April 15-17, at Pinehurst. April 14, the North Carolina Health Association will convene.

Personal.—Joseph H. Way, Major, M. C., U. S. Army, Waynesboro, and president of the North Carolina State Board of Health, who has been for nearly two years in the United States service, has been honorably discharged and has resumed practice.——Charles O'H. Laughinghouse, Lieut.-Col., M. C., U. S. Army, Greenville, a member of the North Carolina State Board of Health, recently returned from overseas, has been discharged and resumed practice.——Dr. C. Curtis Hudson, city health officer of Charlotte, was presented with a silver loving cup by the Rotary Club of that city at a dinner a short time ago.

OHIO

Hospital Opened.—The Greenfield Hospital, Greenfield, was formally opened, March 26. The president of the institution is Dr. Robert J. Jones.

Nonmedical Bill Signed.—The Talley bill which regulates nonmedical practitioners, and which has passed the house and senate, was signed by Governor Cox, March 19.

Personal.—Dr. Aldo V. Sibert has been named physician of the Lima health clinic.——Campbell F. G. Norlin, Cleveland, has been appointed medical superintendent of the Cleveland City Hospital, succeeding Dr. Thomas A. Ellison.——Roland E. Skeel, Major, M.C., U. S. Army, Cleveland, who has just returned from France, delivered an address in Lorain, April 1, on "American Surgeons in the War—A Lesson in Preparedness."——Charles H. MacFarland, Major, M. C., U. S. Army, Cleveland, has been promoted to Lieut.-Col., M. C., U. S. Army, and is now in command of Evacuation Hospital No. 23, Coblenz, Germany.——Dr. Grant S. Van Horn, Batavia, has been appointed physician of Clermont County.——James E. Miller, Capt., M. C., U. S. Army, Steubenville, has returned after nearly a year of service in France.——Benjamin C. Barnard, Major, M. C., U. S. Army, Alliance, in command of Field Hospital 309, American Expeditionary Forces, France, has been cited "For conscientious devotion to duty and untiring energy in caring for sick and wounded under exceptional adverse circumstances, from Nov. 2 to Nov. 20, 1918, following an attack on Nov. 1, 1918."——Dr. Harry L. Rockwood, acting health officer of Cleveland, has resigned and will enter private practice.

Cincinnati

Personal.—J. Louis Ransohoff, Major, M. C., U. S. Army, has returned from abroad.——Charles E. Kiely, Lieut., M. C., U. S. Army, formerly neurologist of Cincinnati Base Hospital No. 25, who has been on duty for nine months at Allery, France, has returned.

PENNSYLVANIA

Society Urges Improvements.—The Allegheny County Medical Society, after an inspection of the Tuberculosis Sanatorium and the Muncipal Hospital, sent a communication to the County Council, May 24, asking that an item for $500,000 be inserted on the proposed bond issue to be voted on by the people, for improvements to these institutions.

Personal.—Dr. Howard L. Hull, Camp Hill, has been appointed chief medical inspector of the state department of health of Pennsylvania.——Dr. Fred H. Bloomhardt, Captain, M. C., U. S. Army, Altoona, on duty with the Three Hundred and Twenty-First Infantry, has been promoted to lieutenant-colonel, and is taking a postgraduate course in medicine at the Sorbonne, Paris.——Dr. Marianna Taylor, Wayne, has been placed in charge of the medical department of the reconstruction work carried on by the Society of Friends in France.

Philadelphia

Mary Scott Newbold Lectures.—The second of the Mary Scott Newbold Lecture Series was given at the College of Physicians of Philadelphia, April 4, by Col. Thomas W. Salmon, M. C., U. S. Army, on "War Neuroses and Their Lesson."

Personal.—Dr. Marie K. Formad of the Women's Hospital has returned from France, where she has been the past year doing relief work among the refugee civilians.——Hubley R. Owen, Captain, M. C., U. S. Army, former chief surgeon of the fire and police departments of Philadelphia, arrived in New York, April 5, and will go to Camp Custer, Mich., to be mustered out.——Dr. James R. Bean has been appointed health commissioner and director of the State Cooperative Laboratory, Oshkosh, Wis.

Workmen's Compensation Law Meeting.—At a stated meeting of the Philadelphia County Medical Society held in Thompson Hall, College of Physicians, April 9, amendments to the workmen's compensation law were the subjects of discussion. The speakers were Harry A. Mackey, chairman of the Workmen's Compensation Board of Pennsylvania; Francis H. Bohlen, general council of the workmen's compensation bureau of Pennsylvania; Mr. Charles A. Gill, superintendent of the Germantown Hospital, and Dr. Fred L. Van Sickle, Olyphant, president of the Medical Society of the State of Pennsylvania.

VIRGINIA

Personal.—Stuart McGuire, Lieut.-Col., M. C., U. S. Army, Richmond, director of Base Hospital No. 45, American Expeditionary Forces in France, has returned from overseas, has been elected president of the Medical College of Virginia, and has gone to Florida to take a few weeks of rest.——Dr. William F. Mercer has been elected associate professor of laryngology in the Medical College of Virginia, succeeding Dr. Samuel C. Bowen, deceased.——Dr. Isaac C. Harrison, Danville, qualified, March 14, as a member of the state board of medical examiners, succeeding Dr. Richard S. Martin, Stuart, deceased.——Dr. John L. Nall, Danville, is reported to be ill with smallpox.——James H. Smith, Joseph F. Geisinger and Robert H. Wright, Capts., and Beverley F. Eckels, Lieut., M. C., U. S. Army, all of Richmond, members of the McGuire Base Hospital Unit, have returned from France.

CANADA

Hospital News.—For an emergency hospital for Vancouver, B. C., the British Columbia government will give a donation

of $3,000, the city giving a like amount.——The Invalided Soldiers' Commission will establish a new military hospital at Saskatoon, Sask.

Personal. — Dr. Peter V. Faucher, Quebec, has been appointed professor of materia medica of Laval University, Montreal.——Dr. L. G. McCabe, Windsor, fractured his leg recently while playing baseball.——Lieut.-Col. Clifford H. Reason, London, Ont, who is commanding No. 3 Stationary Hospital, Doullans, France, will shortly return to his home. ——Dr. Gideo Silverthorn, Toronto, who recently returned from Florida, is ill with double pneumonia.——Dr. Lewis L. Reford is expected home in Montreal next week from overseas.——Sir Thomas G. Roddick has returned to Montreal after spending the winter in Florida.

LATIN AMERICA

Plague in Argentina.—A report from Buenos Aires states that the government has sent a commission into the province of Jujuy for the purpose of fighting an epidemic of bubonic plague which is reported to be serious.——The Santiago dispensary reports 605 cases of typhus fever with thirteen deaths.

Death of Penna.—The sudden death of Dr. José Penna, professor of epidemic diseases at the University of Buenos Aires, known the world around as an authority on epidemiology, and a pioneer in public health matters, is reported. He had long been on the editorial staff of the *Semana Medica*, and was a member of local, national and international scientific associations.

Public Hygiene in Paraguay.—The *Revista Medica del Uruguay* reports that the Departamento Nacional de Higiene and the Asistencia Publica in Paraguay have been consolidated. A number of new decrees have been promulgated, among them some relating to the drinking water, to child labor, to drainage of swamps, hygiene of markets, veterinary inspection, disinfection of vehicles, municipal charities, and the sending of commissions into the interior of the country for purposes of prophylaxis and treatment of diseases.

GENERAL

Debarkation Hospital Abandoned.—It was announced, March 25, that Debarkation Hospital No. 52, Richmond College, Va., had been discontinued, its use being no longer required.

Tri-State Physicians to Meet.—The semiannual meeting of the Northern Tri-State Medical Association will be held at Elkhart, Ind., April 30, under the presidency of Dr. George V. Brown, Detroit.

Bequests and Donations.—The following bequests and donations have recently been announced:

For the continuance and extension of the social service department of Sloan Maternity Home as a memorial to Dr. Edward B. Cragin, voluntary subscription for $50,000.

Harvard University, the income on the residuary estate of Horace Fletcher, to be used to "foster knowledge of healthful nutrition."

St. Joseph's, St. Mary's and St. Agnes' hospitals, Philadelphia, each $1,000 by the will of Charles McElvaney.

Warning.—The readers of THE JOURNAL are warned against a man claiming to be J. F. McClure, of the McClure and Freeman Supply Company, Freeman Building, Cincinnati. He claims to represent a cooperative automobile supply company. He is said to have imposed on a number of physicians in different towns in North Carolina. There is no such firm as McClure and Freeman. The man against whom this warning is directed is about 6 feet in height, weighs 170 pounds, has had a left sided facial paralysis, is clean shaven, well dressed, and appears to make a specialty of dealing with physicians.

Armour and Co. to Make Physical Examinations of All Employees.—Armour and Company are planning to renew medical examinations of the 12,900 men and women working in the Chicago plant. This work was discontinued during the war because of the urgency of orders placed to keep the fighting forces supplied with food and the enormous amount of extra labor needed. Dr. Volney S. Cheney and a corps of assistants will have charge of the work. Through their welfare bureau and their staff of doctors the company offers this service free to the workers. In case defects which have interfered with a man's work are brought to light, he is transferred to some other task in the plant which, in the opinion of the medical men, he is better able to perform.

Court Awards Damages for Death Resulting from Anthrax Contracted from a Shaving Brush.—Anthrax contracted from a shaving brush was the cause of a suit recently brought by Mrs. Emma McCarroll Lindsey against the S. H. Kress Company of New Orleans, which was tried in the federal court at Biloxi, Miss. Mrs. Lindsey stated that her husband bought a shaving brush from the Kress Company. While shaving he cut himself slightly and some of the lather from the brush got into the scratch. He soon developed anthrax which caused his death. Evidently the brush was made from the bristles of an animal that had died of the disease, the bristles not having been sterilized and rendered safe before being converted into a shaving brush. Mrs. Lindsey was awarded $6,500 damages.

Aid Asked for Establishment of Siberian University.—In a letter addressed to American and Canadian Men of Science, Prof. W. Boldireff, the distinguished Russian chemist and scientist, appeals for aid in the way of equipment, both scientific and ordinary, including books, funds, instruments, apparatus, furniture, etc., for the establishment of a medical school at Vladivostok to become ultimately a department in a new university in eastern Siberia. He points out that at present science and research have practically been abandoned in Russia except in the Petrograd Military Academy and in the University and Technological Institute at Tomsk. The Petrograd Academy of Science and the Petrograd, Moscow and Kazan universities, with the latter of which Professor Boldireff was connected, have ceased their activities, and their teaching faculties have been scattered. At present there are available for the new school at Vladivostok men sufficient for a teaching staff who have interested themselves with Professor Boldireff in the establishment of an institution for medical and scientific teaching, and it is believed a student body of 250 could be gathered for the opening year, provided the start can be made this year. At present there are neither funds nor equipment of any kind available for the school, and an urgent appeal is made to scientific men of other countries, especially the United States and Canada, to interest themselves without delay in the equipment of the school.

Conference of Red Cross Societies.—With a view of preparing a program to relieve suffering and combat disease in the general interest of humanity, the Committee of Red Cross Societies called a conference of leading medical experts of the world to convene at Cannes, France, April 1. These first conferences at Cannes are preliminary, on the part of the Committee of Red Cross Societies, to formulating and proposing to the Red Cross societies of the world an extended program of Red Cross activities in the interest of humanity. The first conference, according to announcements, undertook to prepare a program dealing with the organization of the International Council and Bureau of Hygiene and Public Health, which will consider the work to be undertaken in connection with the prevention of epidemic disease, tuberculosis, venereal disease and child welfare. Specialists in attendance are the recognized authorities on these subjects. As a result of these conferences a complete program will be made which will deal with the latest and best means to relieve suffering and combat disease. This program will be submitted at a conference of all Red Cross societies to be held in Geneva thirty days after peace is officially declared. The call for this later conference was issued, February 13, by the International Red Cross at Geneva. Announcement of the formation of the Committee of Red Cross Societies was made in Paris about three weeks ago. It has established headquarters at Cannes, with administrative headquarters at 2 Place de Rivoli, Paris. The committee is composed of representatives of Red Cross societies of France, Great Britain, Italy, Japan and the United States, with Henry P. Davison, formerly chairman of the War Council, American Red Cross, as chairman.

FOREIGN

Influenza in Japan.—The statistics at Tokyo show a higher death rate from influenza, according to the *Japan Medical World*, than has been encountered elsewhere. In the last three months there were 5,077 deaths from influenzal pneumonia. This is equivalent to 28.14 per cent. of the total mortality, and 2.16 per thousand inhabitants.

Assassination of Another Physician.—The *Paris Médical* relates that Dr. Kuhne of Geneva, Switzerland, served in a hospital in Serbia during the Balkan wars before and during 1914, and returned with impaired health for which he took a course of treatment at Leysin. Later he gave his services

to the Serbian sanatorium at Leysin where he was recently assassinated by an insane Serbian soldier.

Italian Congress for Internal Medicine.—The *Riforma Medica* brings the announcement that the annual meetings of Italian internists, that have been interrupted by the war, are to be resumed. The 1919 meeting is to be held at Trieste, in October, if circumstances permit; if not, it will convene at Rome. Maragliano is president of the executive council for the congress, which is to meet shortly to plan the order of the day for the meeting.

Death of Professor Pel.—For reasons of health, Prof. P. K. Pel recently retired from the chair of clinical medicine at the University of Amsterdam which he has held since 1883. His death is now reported, at the age of 67. He was twice president of the Netherlands Medical Association. His writings on internal medicine have carried his name far and wide, and he has long been a familiar figure at international scientific gatherings.

The Manifesto Signed by German Scientists.—In an editorial in the *Journal de Médecine de Bordeaux*, Cruchet, referring to the famous Manifesto signed by ninety-three leading German scientists, relates that this Manifesto was signed later by hundreds of other scientific professors. By Oct. 16, 1914, it had 3,131 signatures, including twenty from the medical department of the University of Strasbourg, thirty from Heidelberg, and thirty-five from Leipzig. Copies of it were found recently at Strasbourg.

Portugal's Losses During the War.—The *Medicina Contemporanea* of Lisbon quotes some recent statistics, although stating that they are not official, showing that in France 43 officers, 62 noncommissioned officers and 1,236 of the rank and file lost their lives, with a total of 5,626 wounded, 2,982 missing and 7,740 taken prisoner. Portugal lost also on the sea, 28 men, including 4 officers; in Mozambique a total of 2,477, including 25 officers and 1,055 natives; and in Angola a total of 680, including 30 officers and 650 Portuguese soldiers. The medical officers are included in these figures.

Deaths in the Profession Abroad.—Sir **James MacKenzie Davidson,** London, M.B.C.M., Aberdeen, 1882; aged 62; an authority on radiology; consulting radiologist to the military hospitals in London district during the war; inventor of a precise means for the localization by roentgen ray of foreign bodies of the eye, and of the orbit in general; fellow of the Royal Ophthalmological Society; president of the radiological section of the Seventh International Congress of Medicine; died at his home, April 2.——Prof. **Sir William Crookes,** London, one of the most eminent chemists and physicists of the world; aged 86; died at his home in London, April 5. Professor Crookes received his education at the Royal College of Chemistry in London, and in 1861 became assistant professor in that institution. In 1862 he discovered thallium, a new element, and while carrying out investigations of this metal and its properties, utilized a principle thus discovered, in the construction of the radiometer, and this in turn led on to his researches on the phenomena produced by the discharge of electricity through tubes from which air had been exhausted. Later on he conducted researches into the constitution of rare earths with especial reference to radium. He was the author and editor of many works on chemistry and chemical technology, and in later years was much interested in psychic phenomena.

Vaccination Made Compulsory in the Province of Madrid.—The *Siglo Medico* states that a recent decree of the governor of Madrid province makes vaccination against smallpox compulsory throughout the province within thirty days from Jan. 10, 1919. The vaccination will be done free at the seventeen emergency stations and at the municipal laboratory. The alcaldes who fail to organize a vaccination service as ordered will be fined 500 pesetas. No one shall be permitted on the streets and roads of the province without having been vaccinated. They must produce the certificate of vaccination or show the vaccination scar. Pedestrians, persons in vehicles or on horseback who cannot prove that they have been vaccinated must be taken to the vaccinating station. If they resist, a fine of 500 pesetas shall be imposed or a prison term for fifteen days. The alcaldes shall organize a *servicio de vigilancia* in their respective districts. The above fine or arrest shall be enforced also for every private individual or company which admits or retains in its service any employee who cannot show a vaccination certificate. Similar penalties shall be enforced for teachers, heads of societies, hotels, lodging houses, etc., who fail to exact within forty-eight hours a vaccination certificate for all persons in their establishments. The above penalty will be enforced also for forging or fraudulent use of others' certificates. The public health inspector general of the province and his medical subordinates are to visit all the towns to ensure that this decree has been enforced. The only ones exempt from the decree are soldiers and persons presenting a medical certificate to the effect that vaccination is contraindicated in their case.

Reply of the University of Bordeaux to the University of Leipzig.—The University of Leipzig recently sent to the universities of the neutral countries an open letter protesting against the dismissal and banishment within twenty-four hours of the German professors and librarians of the University of Strasbourg. The protest was signed by the dean and senate of the University of Leipzig and bore an endorsement by the University of Heidelberg. It concluded "We beg you to note this open letter and to distribute it to the press of the neutral countries and to send at once a copy to the French, English and American universities and academies of science." The protest was forwarded by the University of Upsala to the University of Bordeaux with the expression of a wish that international relations might soon be resumed between the universities of all countries.

The *Journal de Médecine de Bordeaux* publishes the letter in full, and gives also the reply which the University of Bordeaux sent to the University of Upsala, as follows: "Since you thought it incumbent on you to forward to us the letters from the Universities of Leipzig and Heidelberg, we beg you in turn to give the universities of the neutral countries and the German universities if you think it will serve any purpose (*si vous croyez que cela puisse servir à quelque chose*) an account of the consideration shown by the Germans during their occupation of Lille to the professors, to science and to scientific interests. You will find an account of this in the transactions of our Académie des Sciences. You will find other accounts in the *Revue des Deux Mondes* over the signature of the rector of the University of Lille, as both witness and victim. And you will judge for yourself whether the annoyance of having to move, even rather hastily, is anything to compare with it.

"As to the wish you express in your own name relative to a resumption of relations between universities, we beg all the universities of the neutral countries, and especially the University of Upsala, which has such a high reputation in France, to send delegates to visit the north of France or even just to pass through certain parts of it in the cars. After they have returned from this trip, then you can tell us how long an interval you would allow to elapse before resuming relations with people who had done the same thing to your own country. In our opinion, the generation which has committed these abominations or which, in the Manifesto of which you know, backed up (*s'est solidarisée*) those that did commit them, has cut itself off from humanity. We will talk, if it desires it, with the next generation."

LONDON LETTER

LONDON, March 19, 1918.

Appointment of Whole-Time Physicians at the London Hospital

An entirely new departure in this country is about to be made at the London Hospital by the appointment of whole-time paid physicians. At the quarterly court of the governors, the president, Lord Knutsford, said that the matter had been engaging earnest consideration for a long time. It touched a principle that had governed the work of the sick poor ever since voluntary hospitals existed—the care of the patients by an honorary visiting staff. Under this system, splendid service had been given by the medical and surgical staff, which had spread the reputation of the hospital far and wide; and if medicine and surgery stood today in the position that they did fifty years ago, no improvement could be suggested. Every patient was seen once or twice a week by a man of great experience, and his instructions were carried out by an officer resident in the hospital. That was an ideal arrangement under the conditions that had prevailed. But in the past twenty-five years, discoveries had been made which had revolutionized treatment—the roentgen ray, vaccines and antitoxins, and scientific knowledge had advanced with regard to the chemical processes of the body, the blood and of the blood pressure, the functions of nerves in relation to pain and to the mind, and how these functions were affected by disease. The cure and prevention of disease had become subjects for advanced technical knowledge and of continuous study. There was no question of changing the present honorary staff for a paid and whole-time staff; but two vacancies, due to the

retirement of Dr. Head and Dr. F. J. Smith, had occurred. Instead of appointing new members to the honorary staff, whole-time officers would be appointed. Under the new arrangement, the "firm" would consist of a director, three clinical assistants, and laboratory and clerical assistants. All of these would be engaged for the whole of their time and would be paid for their services. It was to be understood that this was not simply a teaching unit. It was a unit which would have to carry out precisely the same work as other members of the hospital staff. The members of this unit would give their whole time to curing disease, research on the causes of disease, and the education of the medical students. A very important part of their duties would be researches into the early causes of disease. If the scheme proved to be advantageous, it might be repeated as vacancies occurred. It might also be that whole-time units of very special departments, such as dermatologic, syphilologic, gynecologic, orthopedic and genito-urinary, might be formed on somewhat similar lines.

The War and Mental Disease

In his annual report on the Royal Edinburgh Mental Hospital, the superintendent, Dr. G. M. Robertson, deals with the mental effects of the war. He says that the public anxieties connected with the varying fortunes of the war have not caused much insanity. The mental breakdowns that were due to these causes have been more than counterbalanced by a diminution in other directions. The war was an event of such absorbing interest that it distracted many from their introspective habits and personal worries, and it thus acted as a protection to them. Even if there was public gloom it did not touch the individual like a private sorrow, for the former is not only more remote, and cuts less deeply but there is an excitement associated with it which acts like a mental stimulant. The effects due to private griefs and losses have been much more serious, and of course the appalling conditions of modern warfare have been a terrific strain on the nerves of the combatants. Dr. Robertson looks forward with great apprehension as to what the effects of these serious recurring outbreaks of influenza will be on the mind and nerves of those who have already suffered much. Short of producing actual mental disorder, the extraordinary economic conditions experienced during the war have had a very unsettling effect on many. A psychologic factor that operates in fomenting the labor unrest that exists has not yet been referred to by any one. It is a remarkable fact how many young men who were exempted from military service, and earned high wages in comfort and safety at home, are taking a leading and active part in these disturbances. They believe that they are actuated by altruistic motives, and are fighting solely for the rights and welfare of the class to which they belong; but how much of their action is really due to the uneasiness and unrest in their own minds? Just as it sometimes happens that a great swindler throws himself into church work to stifle the reproaches of his conscience, so these men who shirked fighting for their country ease their minds of this painful knowledge, and protect their injured feelings of self-respect by the thought that they are nobly doing their bit by now fighting for their fellow workers. This is a mental process for defense purposes known as inversion. How different the state of contentment and the peace of mind of the severely wounded. They know they have done their duty by their country and feel that every one else thinks so too. The hero instincts are distressing the one class while comforting the other.

Vital Statistics: More Deaths than Births

The report of the registrar-general for the last quarter of 1918 is of unusual interest. For the first time since the establishment of registration, the number of deaths exceeded the number of births. The excess was 79,443. The average excess of births over deaths in the fourth quarter of the three preceding years 44,785. This serious condition must be viewed in the light of the influenza epidemic, to which no fewer than 98,998 deaths, or 41 per cent., of the total deaths of the quarter are attributed. Influenza, however, does not entirely account for the fact that the relation between the birth rate and the death rate is not improving. The birth rate in the last quarter of 1918 was the lowest on record.

Supply of Medical Students

Statistics furnished by the General Medical Council show that a remarkable increase has taken place in the number of medical students. The total number in attendance in January was 9,490. This compares with 7,630 in May, 1918; 7,048 in October, 1917, and 6,682 in January, 1917. Further analysis of the figures shows that in January last there were 6,798 men and 2,692 women students. The first year students numbered 2,152 men and 755 women. The contrast of these totals with the numbers of students in the final year of their curriculum is striking. It is due, of course, to the disturbing effect of the war. In the latter category there were only 936 men and 226 women.

Statistics of Venereal Disease

In a popular lecture on venereal diseases at Gresham College, Sir Robert Armstrong Jones, lecturer on psychologic medicine to St. Bartholomew's Hospital, stated that it had been definitely ascertained that 2 per cent. of the army, or over 100,000 men (some said a quarter of a million), were infected with venereal diseases. In the civil population at least 2 per cent. were infected. Out of 800,000 infants born yearly in England and Wales, 100,000 died before the end of the first year. Of these, a very large number died from inherited syphilis. He hoped that the new education act, which carries on compulsory training to the age of 16, would greatly facilitate the understanding of the dangers, and that no boy or girl would leave school without receiving some warning of the great risks of immorality.

PARIS LETTER

Paris, March 9, 1919.

The Radio-Surgical Aeroplane

Speaking of the new use to which the aeroplane has been put, it is suggested that the "Aerochir" might also be used to aid in times of peace in case of catastrophe, railroad accident, or explosion, occurring at remote points and where surgical assistance should be given as soon as possible. This surgical aeroplane was described in The Journal, Oct. 12, 1918, p. 1252. It will find its greatest sphere of usefulness in the colonies or other sparsely settled regions.

The Medal of the Lariboisière Hospital

The city of Paris recently dedicated a tablet commemorative of the medal of honor which the Assistance publique awarded to the Lariboisière Hospital last year. M. Brisac, directeur de l'Assistance et de l'Hygiène Publiques au ministère de l'intérieur, took part in the ceremonies at which were present delegates from all the hospitals of Paris. The medal was awarded in tribute to the courage and the devotion of the physicians, interns and nurses during the catastrophes from bombs and bombardment.

Organised University Rapprochement

The "Rapprochement universitaire," presided over by M. Larnaude, dean of the law department of the University of Paris, recently tendered a reception at its social headquarters to American professors and students now residing in Paris. M. Henri Bergson, speaking in French and in English, welcomed the large number of members of the teaching corps who had responded to the invitation of the "Rapprochement universitaire." He stated that the work accomplished thus far by this organization has been of great value and will prove more so in the future. He extended thanks to the many students of American universities who had fought in France for the cause of right and liberty, many of whom were present at the ceremonies.

Professor Nettleton recalled that fourteen months ago the Comité du rapprochement universitaire had informed the Comité exécutif de l'union universitaire américaine in Europe of its intention to organize at the Sorbonne a gala fête in honor of the students of the American universities who had come to France to fight a common enemy. The German offensive had made it necessary to delay this project until a more favorable time.

State Aid for Sanatoriums

The Chamber of Deputies recently passed a bill which provides for the establishment of special sanatoriums. The object proposed is to associate the government with all the provinces, communities, public and private institutions and associations in the work of establishing sanatoriums for the treatment of pulmonary tuberculosis. The state will share in the cost of construction, equipment and maintenance.

Reorganization of the Medical Service in the Merchant Marine

At the suggestion of M. Bouisson, high commissioner of the transports maritimes et de la marine marchande, the Academy of medicine appointed a committee to investigate the possibilities of the reorganization of maritime medical

service. This commission having examined official documents and having been addressed by Dr. Reynès, president of the Syndicat de médecine sanitaire maritime de France, has decided in favor of the autonomy and independence of this service, and has suggested the creation of a new Corps des médecins de la marine marchande, to be appointed by competitive examination and to be paid by the state.

Second Congress of Pediatrics

During the week of April 20 to 27 a congress on pediatrics will be held in Paris. This congress was originally scheduled to take place at Lyons in October, 1914. The committee appointed at that time still has charge of the arrangements for the congress, with Professor Weill of Lyons as chairman.

Military Medal Presented to a Physician

Dr. Jean Meyer, sous-aide-major has been decorated with the military medal because of his devotion, professional ability and military spirit. He had been attached to a combatant unit for thirty-nine months, took part in many large battles, and has received nine citations. He was wounded once.

Personal

The following have been made members of the Commission supérieure de l'enseignement médical: Dr. Hartmann, professor of clinical surgery in the Paris medical faculty; Dr. Arnozan, professor of clinical medicine on the Bordeaux medical faculty; Dr. J. Lépine, associate professor in the Lyons medical faculty, and Dr. Alezais, director of the Marseilles school of medicine and pharmacology.

The Academy of medicine elected Dr. E. C. Achard, professor of pathology and general therapeutics on the medical faculty of Paris, to succeed Dr. Raphael Blanchard in the post of secretary. Dr. Louis Martin, physician in the Pasteur Hospital, was elected a member of the section on therapeutics and natural history, vice the late Dr. Bureau.

Deaths

Dr. Henri Hallopeau, associate professor in the Paris medical faculty and honorary physician to the Saint-Louis Hospital, is dead, aged 78 years. He was born in Paris in 1842 and began his studies at the Bonaparte Lyceum, now known as the Condorcet Lyceum. In 1866 he became a hospital intern, and received his doctorate in 1871. A little later he became medical attendant at the hospital, and then professor agrégé. Dr. Hallopeau specialized in dermatology and syphilography. He contributed much to the reputation of the famous school of the Saint-Louis Hospital, and was among those who revised syphilitic medication. He studied all the forms of dermatoses, notably the tuberculids, lupus, and leprosy, and in 1901 he called attention to the great danger from these diseases to which European countries were exposed, particularly France. In 1904 he published a Treatise on General Pathology and in 1900, in collaboration with Leredde, a Practical Treatise on Dermatology. He had been a member of the Academy of Medicine since 1893.

Dr. Victor Chaput, surgeon at the Lariboisière Hospital, died recently, aged 56 years. A year ago he lost his son, an aviator of repute, who was killed in aerial combat after having brought down his sixteenth enemy aeroplane.

Dr. Beni-Barde, celebrated specialist in hydrotherapy, has just died, aged 83. He was a member of the Société de médecine de Paris and of the Société d'hydrologie, and was the author of numerous works, especially a Treatise on Hydrotherapy, which became an authority.

Marriages

WILLIAM BARCLAY TERHUNE, JR., Lieut., M. C., U. S. Army, New Orleans, on duty with U. S. Army General Hospital No. 2, Fort McHenry, Md., to Miss Jane Denham of Boyceville, Wis., March 19.

WILLIAM BARCLAY PARSONS, JR., Lieut., M. C., U. S. Army, New York City, to Miss Rose Saltonstall Peabody of Groton, Mass., March 22.

ELWYN DENE PRICE, Silver City, N. M., to Miss Ida Mae Heminger of Fort Madison, Iowa, at Las Vegas, N. M., December 20.

MARY JANE MCFALL, Somerset, N. S., to Mr. Hugh McKinley Nesbitt of Tompkins, Sask., February 20.

JOHN BELL MATTHEWS, Milwaukee, to Miss Katherine I. Robinson of Terre Haute, Ind., March 8.

Deaths

Daniel Lewis, Alfred, N. Y.; College of Physicians and Surgeons in the City of New York, 1871; aged 73; a member of the Medical Society of the State of New York, and president from 1884 to 1886; vice president of the New York Academy of Medicine in 1896; medical director for New York in the Grand Army of the Republic in 1888; commissioner of health of the state of New York from 1882 to 1894; consulting surgeon to the Dobbs Ferry Hospital, and consulting physician to the Baptist Home, Alfred; a veteran of the Civil War, in which he served in the United States Navy; a specialist in surgery; died at his home, March 22.

Frank Van Fleet ✠ New York City; Bellevue Hospital Medical College, 1881; aged 58; a member of the New York Academy of Medicine; president of the board of surgeons of the Manhattan Eye, Ear and Throat Hospital, and formerly president of the New York County Medical Society; consulting ophthalmologist to the Park Hospital and the House of the Good Sheperd; consulting ophthalmologist to several government hospitals caring for wounded soldiers; died suddenly in his office, April 5, from heart disease.

Jeremiah E. Finch, Port Rowan, Ont.; Toronto School of Medicine, 1854; aged 89; surgeon of the Seventh Minnesota Volunteer Infantry during the Civil War; president of the Minnesota State Medical Association in 1878; mayor of Hastings, Minn., in 1886, and president of the local board of education from 1871 to 1884; died at his home, March 2, from senile debility.

Charles Nahum Haskell ✠ Bridgeport, Conn.; University of Vermont, Burlington, 1890; aged 57; attending neurologist and chief of the outpatient clinic of St. Vincent's Hospital, Bridgeport; formerly attending physician at the Emergency Hospital, and city physician of Bridgeport; died in Roosevelt Hospital, New York City; March 5, from angina pectoris.

Chelius S. Pixley, Los Angeles; University of Wooster, Cleveland, 1871; aged 70; demonstrator of anatomy in his alma mater in 1872 and 1873; local surgeon of the Lake Shore and Michigan Southern Railway at Elkhart, Ind., from 1873 to 1890; once president of the Elkhart County (Ind.) Medical Society; died at his home, March 21.

William Cheatham ✠ Louisville, Ky., 1873; aged 66; professor of the eye, ear, nose and throat in his alma mater for many years and later emeritus professor; physician to the Masonic Home, Episcopal Orphanage, and Presbyterian Orphanage Hospital, Louisville; died at his home, April 3, from angina pectoris.

Frank Finney ✠ La Junta, Colo.; Georgetown University, Washington, D. C., 1882; Bellevue Hospital Medical College, 1885; aged 50; since 1899 chief surgeon of the Santa Fe Railway Hospital at La Junta; at one time president of the Colorado State Medical Society; died at his home, March 23, from angina pectoris.

James Meek Caldwell, Gastonia, N. C.; Medical College of the State of South Carolina, 1885; aged 57; a member of the Medical Society of the State of North Carolina; for several years a member of the staff of the State Hospital for the Insane, Columbia, S. C.; died at his home, March 2, from heart disease.

James J. Clark, Washington, D. C.; New York Homeopathic Medical College, New York City, 1869; aged 90; inventor of several telegraphic devices, including the closed circuit repeater; a contemporary of Samuel Morse; died at his home, March 21, from pneumonia following influenza.

Newton C. Steele, Chattanooga, Tenn.; University of Nashville, Tenn., 1873; aged 69; a member of the Tennessee State Medical Association; professor of diseases of the eye, ear, nose and throat in the Chattanooga Medical College; died at his home, March 19, from pneumonia.

Wallace Clarke, Utica, N. Y.; McGill University, Montreal, 1871; aged 69; a member of the Medical Society of the State of New York; for several years health officer of Marquette, Mich.; a specialist in diseases of the eye, ear, nose and throat; died at his home, March 16.

Richard D. Shannon, Sedalia, Mo.; Jefferson Medical College, 1868; aged 76; for several years superintendent of schools of Joplin and Lousiana, Mo.; once president of the University of Missouri; died at the home of his daughter in Sedalia, March 18.

✠ Indicates "Fellow" of the American Medical Association.

Nicholas Emery Soule, Exeter, N. H.; University of Pennsylvania, Philadelphia, 1851; aged 93; a member of the United States Sanitary Commission during the Civil War; for many years a teacher in private schools in Cincinnati; died at his home, March 26.

Edgar Cole, Holmesville, Ohio; Eclectic Medical College of Pennsylvania, Philadelphia, 1872; American University of Pennsylvania (Eclectic), Philadelphia, 1873; aged 76; a member of the Ohio State Medical Association; died at his home, January 10.

George L. Parr, Washington, Ind.; University of Louisville, Ky., 1874; aged 71; a member of the Indiana State Medical Association; died in the Good Samaritan Hospital, Vincennes, Ind., March 27, a few hours after a surgical operation.

Frederick Robinson Smith, Rochester, N. Y.; Hahnemann Medical College, Philadelphia, 1893; aged 48; coroner of Monroe County, and president of the New York Motor Federation; died at his home, March 25, from pneumonia.

Frank Thomas McGuinn, Chicago; Northwestern University Medical School, Chicago, 1909; aged 33; was killed by the overturning of his automobile, near the boundary line between Evanston and Chicago, March 29.

Luke P. Davidson, Hollywood, Ark. (license, Arkansas State Eclectic Medical Board of Examiners, 1908); aged 37; died in his room in a hotel in Little Rock, March 23, it is believed, from the effects of poison.

William Chapman, Seattle; Northwestern College of Bio-Chemistry, Spokane, Wash., 1889; aged 83; a member of the city council of Seattle for four years; died at his home in Laurelhurst, Seattle, March 24.

Harold Montgomery Craig ✠ **Capt., M. C., U. S. Army;** Detroit College of Medicine and Surgery, 1911; aged 30; on duty at Fort Stevens, Ore.; died at that post, October 8, from pneumonia following influenza.

Harry Gustave Lundgren, Ironwood, Mich.; University of Michigan, Ann Arbor, 1918; aged 25; a member of the staff of the University Hospital, Ann Arbor; died in that place, March 24, from pneumonia.

George Francis Lewis, Collinsville, Conn.; Yale University, New Haven, Conn., 1865; aged 78; a member of the Connecticut State Medical Society; died at his home, February 25.

John G. Walthall, Gas City, Ind.; Medical College of Indiana, Indianapolis, 1885; aged 64; health officer of Gas City; died at his home, March 27, from heart disease.

John M. Rowe, Charleston, Mo.; University of Nashville, Tenn.; 1869; aged 77; a Confederate veteran; died at his home, January 2, from pneumonia following influenza.

Walter H. Kremer ✠ Germantown, Philadelphia; University of Pennsylvania, Philadelphia, 1894; aged 58; died at his home, March 15, after an operation for appendicitis.

Samuel Ellsworth Bailey, Berkeley, Calif.; University of California, San Francisco, 1912; aged 31; died at his home from the effects of an accidental gunshot wound.

John H. Bowman ✠ Berwick, Pa.; University of Pennsylvania, Philadelphia, 1888; aged 60; died at his home, March 15, from chronic nephritis.

Daniel H. Braman ✠ Victoria, Texas; Tulane University, New Orleans, 1890; aged 53; died at his home, March 15, from cerebral embolism.

Robert Francis Gross, Weir, Texas; University of Louisville, Ky., 1906; aged 50; died at his home, January 6, from pneumonia.

Francis H. Sinning, Titusville, Pa.; American Eclectic Medical College, Cincinnati, 1885; aged 63; died at his home, March 15.

Reuben Gross, Eureka, Calif.; University of Glasgow, Scotland, 1862; aged 87; died at his home, March 13, from senile debility.

Asa S. Ashton, Piqua, Ohio; Jefferson Medical College, 1864; aged 86; died at his home, February 21, from senile debility.

Charles Leo Ebnother, Downs, Kan.; State University of Iowa, Iowa City, 1883; aged 65; died at his home, March 12.

John Fitzhugh May ✠ Waverly, Va.; Jefferson Medical College, 1881; aged 51; died suddenly at his home, March 18.

James C. Ford, Santa Cruz, Calif; Missouri Medical College, St. Louis, 1859; aged 80; died at his home, February 12.

Frank Chester Fowler, New London, Conn. (license, Connecticut, 1893); aged 59; died at his home, March 19.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

COLLOSOL COCAINE NOT ADMITTED TO N. N. R.

Report of the Council on Pharmacy and Chemistry

The report which appears below was adopted by the Council and sent to the Anglo-French Drug Co., Ltd., New York, for comment in December, 1918. No explanation has been received from the manufacturer. For the information of the profession the Council has now authorized publication of the report.

W. A. PUCKNER, Secretary.

"Collosol Cocaine" was submitted to the Council in October, 1918, by the Anglo-French Drug Co., Ltd., New York, under the claim that it was an "absolute colloid" and that it contained "1 per cent. cocain." The label on the submitted specimen declares:

"Collosol Cocaine 1-100"

". . . the Cocaine exists as the pure alkaloid in the Colloidal state—the condition in which it is isomorphic with the protein of the body fluids. The effect is more prolonged than that of a molecular Cocaine Solution and being *non-toxic* absorption presents no practical danger."

The product was assigned to the Committee on Pharmacology for consideration. The following report was submitted and its adoption by the Council recommended by the committee:

> "Collosol Cocaine" is said to be a colloidal form of cocain and is alleged to possess a remarkably low toxicity. The subjoined report of the A. M. A. Chemical Laboratory, however, shows that the preparation does not have the composition claimed for it and it is, in effect, misbranded. In fact the English manufacturers concede that it is not an "absolute colloid" and that the declaration with regard to the percentage of cocain is incorrect.
>
> It is recommended that, without considering other conflicts with the rules of the Council at this time, "Collosol Cocaine" be declared inadmissible to New and Nonofficial Remedies for conflict with Rule 1 which requires that the composition of an article must be correctly declared. The report of the A. M. A. Chemical Laboratory is appended.

REPORT OF THE A. M. A. CHEMICAL LABORATORY

Simpson, Hewlett, and Eyre (*Lancet*, April 28, 1917, p. 660) reported "Collosol Cocaine" to be much less toxic than cocain. These writers, however, did not verify the statements as to composition and in the light of subsequent chemical examination it is not to be wondered at that "Collosol Cocaine 1.0 per cent." was much less toxic than a solution containing 1.0 per cent. of cocain hydrochlorid.

Barger, Dale and Durham report from the Department of Biochemistry and Pharmacology, Medical Research Committee (*Lancet*, Dec. 1, 1917, p. 825), that they examined "Collosol Cocaine" and found it to contain but 0.25 per cent. of cocain. They also found that the cocain was not present in a colloidal form. Discussing the low toxicity claimed by the manufacturers, these investigators state:

"In the samples which we examined the toxicity was, indeed, much lower than that of an ordinary 1 per cent. solution of a cocain salt; but the local anesthetic action was low to a corresponding degree, and both actions corresponded satisfactorily with the proportion of cocain chemically recoverable from the solution."

Stroud, of the Crookes Laboratory (which manufactures the preparation), who apparently had been informed of this work in advance of publication, admits the correctness of it, and states (*British Medical Journal*, Nov. 24, 1918, p. 710) that "whilst the colloidal protective apparently absorbs a portion of the cocain, the remainder is found not to exhibit the attributes of a colloid. . . ."

The specimen of "Collosol Cocaine" submitted to the Council and labeled "Collosol Cocaine 1-100" was found to con-

tain at most 0.4 per cent. cocain. The examination was made in accordance with the method used by Barger, Dale and Durham and calculated as cocain. This method, however, probably would not distinguish between cocain and basic decomposition products, but would include all as cocain in the amount found. The specimen of "Collosol Cocaine" examined was neutral or slightly acid, a fact which tends to confirm the conclusion of the British investigators that "Collosol Cocaine" contains cocain in noncolloidal form and precludes an increased physiologic effect due to alkalinity.

The Council adopted both the report submitted by the committee and also that of the A. M. A. Laboratory and declared "Collosol Cocaine" inadmissible to New and Nonofficial Remedies.

CUPRASE NOT ADMITTED TO N. N. R.

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report on Cuprase, sold by the Anglo-French Drug Co., Ltd. The Council's criticisms of the advertising claims were sent to the firm, December, 1918. The firm made no reply and essentially the same claims are contained in recent advertisements.

W. A. PUCKNER, Secretary.

"Cuprase" is now being advertised and sold in the United States by the Anglo-French Drug Co., Ltd., the firm which also markets it in England. It is said to be "prepared in the Laboratories of F. Ducatte, 8 Place de la Madeleine, Paris." According to an advertising circular entitled "The Medical Treatment of Cancer" "Cuprase" is "chemical colloidal copper"; in another place it is "a colloidal copper hydroxid," which is said to be obtained chemically by the reduction of salts of copper in the presence of albumosic acid.

A box (price $8.50 less 10 per cent. discount) of "Cuprase-Doctor Gaube du Gers" was purchased recently from the Anglo-French Drug Co., Ltd. It contained eight ampules each containing approximately 6 c.c. of a brownish fluorescent liquid. No information of composition was given on the box, except the line: "Chaque ampoule contient: 0 gr. .00121 de Cuivre pur" (Each ampule contains 0.00121 gr. of pure copper). The A. M. A. Chemical Laboratory reports that the preparation does contain a small amount of copper, with some protein material and about 1 per cent. sodium chlorid.

The therapeutic claims in the advertising circular are those commonly made for cancer "cures" and are about equally convincing. The publication of such statements and quotations as the following, which appear in a pamphlet "The Medical Treatment in Cancer," cannot be too strongly condemned in a medicament that at best has only an experimental status:

"A special preparation, Cuprase, has been introduced into therapeutics which has been remarkably successful. In the history of the therapeutics of cancer, nothing has been found which can compare with the effects produced by means of Cuprase. Clinical facts carry greater weight than theoretical deductions. It follows, from the clinical observations which I have collected, that in the large majority of cases Cuprase effects the diminution or disappearance of the pains, an improvement in the general condition, a diminution or arrest of the neoplasms, and finally in certain cases, a cure has been effected. It should be remarked that all or nearly all the observations refer to inoperable cases in which the prognosis was unfavorable at an early date. It is needless to emphasize the practical importance of a preparation capable of yielding such results, even relative, in the worst stages of a disease which has always been regarded as absolutely resisting the action of all internal remedies."

"To sum up, Cuprase has given positive results in about 94 per cent. of the cases in which it has been employed for a sufficiently long period, and some brilliant results in about 20 per cent. of these cases. Therefore, it may be affirmed, that among the internal remedies for cancer, Cuprase is the one which has produced the most successful results, and can, under certain circumstances, compete with surgical methods, even, so far as the rapidity of their results are concerned."

"It is indicated:

(a) apart from all operation, and as a specific and curative remedy;
(b) before an operation, in order to give tone to the patient, mobilise the tumour, destroy its toxins;
(c) after the operation, as a tonic and anti-toxic, and in order to avoid frequent relapses which are always possible."

Essentially the same statements are made in the more recent advertisements (f. i. Urological and Cutaneous Review, Feb., 1919). Opposed to these loose statements are the results of Richard Weil (THE JOURNAL A. M. A., 1913, Sept. 27, p. 1034; ibid, 1915, April 17, p. 1283). Weil avoided pitfalls of subjective impressions and used as the essential criterion of efficiency "the demonstrable reduction in size of a tumor, of a kind not to be attributed to the natural processes of evolution of that tumor or of its associated lesions" (l.c. 1915, p. 1289).

The available evidence for Cuprase is far from meeting this criterion. That published by the manufacturers and agents presents only vague generalities, and no definite data. The evidence gathered by Weil himself permits an estimate of the value of Cuprase and it is entirely unfavorable. He states (l.c. 1915, p. 1288):

"Colloidal copper has been used in recent time for the same purpose by Gaube du Gers and by others. I have recently examined the effects of colloidal copper on malignant tumors in man, and have been unable to find that it has any therapeutic value. Furthermore, a study of the distribution of the copper in tumors obtained at operation or by necropsy from individuals so treated failed to show that the copper had been deposited therein."

In view of the extravagant and cruelly misleading therapeutic claims, and the indefinite statements of composition, the Council voted Cuprase ineligible to N. N. R., and authorized the publication of this report.

Correspondence

"THE NEEDS OF MEDICAL EDUCATION AS REVEALED BY THE WAR"

[NOTE.—See article with this title, this issue, page 1050, and editorial, page 1076.—ED.]

To the Editor:—At the fifteenth annual conference of the Council on Medical Education of the American Medical Association, convened in Chicago, March 3, 1919, I listened with intense interest to a paper under the title quoted above. This paper was written by Brig.-Gen. Edward L. Munson, M. C., U. S. Army, and was read before the conference by Brig.-Gen. F. A. Winter of the same corps. I presume that this article has official sanction and is an official statement of the experience which the regular medical corps has had with the reserve corps in the war. General Munson's conclusions are based on a large number of examinations carried out in the medical officers' training camps. The men coming from civilian life, according to General Munson, represented the better part of the civilian profession. He says:

"The medical officers who finally reached the medical training camps represented better than the average of the medical profession of the country, for these candidates had been subjected to several processes of elimination:

"(*a*) They had to be invited to appear for examination by the Surgeon-General, and unless they appeared to be probably desirable, this invitation might not be forthcoming.

"(*b*) They had to be graduates of reputable medical colleges, which ordinarily eliminated men coming from institutions of poor character.

"(*c*) They had to be licensed to practice in the state in which they lived, which would exclude medical graduates who had been found later to be not thoroughly qualified.

"(*d*) They had to be in the active practice of their profession, thereby excluding the failures in medical practice who were making their living by some other vocation.

"(*e*) They had to pass an examination before a local board, which had to be satisfied with their professional, physical and moral qualifications. Here occurred the greater number of rejections, for the local board not only was in a position to test out qualifications by examination, but in many instances it knew the candidate personally or by reputation, and was well informed as to his antecedent activities and conduct.

"(*f*) Before they were commissioned, the American Medical Association investigated and reported on their cases, to

make sure that there was nothing in their career that should render undesirable their appointment as medical officers.

"(*g*) Finally, the Surgeon-General had the right of rejection, which was exercised in the case of men who ultimately appeared from their papers to be not qualified for the service.

"Thus a large proportion of the undesirables were excluded from service, and never reached a medical training camp which dealt with an already selected class. That this selected class presented still further professional deficiencies invites reflection on the part of all those in charge of medical education."

As one who has given the greater part of his life to medical education, I have been deeply impressed by General Munson's paper, and especially by the last sentence in the quotation given above, and the purpose of this letter is to induce General Munson to give further information concerning his experience with the reserve medical officers. If the best medical schools in this country are turning out the poor product indicated in General Munson's paper, it is high time that those responsibly connected with these schools should recognize it. For the results reached by General Munson after his experience with this hand-picked body of civilian doctors, the reader is referred to a full abstract of General Munson's paper, published in THE JOURNAL, March 15, 1919, p. 822.

Suffice it to state here that General Munson found such a large percentage of these selected civilian physicians unfit, not for merely military duty, but for professional service, that the result is quite discouraging to medical educators who have labored under the delusion that competent practitioners predominated among their graduates. Will General Munson give us further information, in order that medical teachers may profit by his criticism, and make an honest endeavor to remedy some of the most glaring deficiencies? I am asking General Munson to answer the following questions, with such elaboration on each as he may choose to make, for the benefit of myself and others engaged in teaching medicine:

1. What was the percentage of reserve medical officers who served as chiefs of the professional services in the base hospitals in this country and in France? In what respects did these chiefs of service fail professionally?

2. What was the percentage of reserve medical officers in the staffs of the base hospitals in this country and France, below the grades of chief of service? How many of the total serving in this capacity were regular, and how many reserve officers? Wherein did the reserve officers show their professional inferiority to regular officers?

3. What was the percentage of reserve medical officers, compared with total medical officers, who served in the field, especially on the active battle fields of France? What was the proportion of reserve medical officers killed and wounded on the battle fields of France, compared with total medical officers killed and wounded?

4. What was the percentage of the total medical service rendered our soldiers, which was performed by reserve corps men, and wherein did reserve officers show their inferiority to regular medical officers in this service?

As I read General Munson's paper, it is an official condemnation of the professional attainments of the hand-picked civilian medical men. He painstakingly points out that the men, on an examination of whom his opinion is based, were selected and represented the best in the civilian profession. I am not questioning the fairness of General Munson's statements, or the correctness of his conclusions. As the dean of a medical school which furnished from its graduates hundreds of medical men to the reserve corps, I would like to know more fully wherein, and in what particulars, my former students have failed: not as military men, because they have had no training along this line, but in their professional attainments. The purpose in asking for this information is that it may enable me and other medical educators to either attempt to make a radical improvement in the methods and scope of medical education, or to give it up altogether in despair. I am sure that General Munson can render medical educators in this country, and the profession in general, a great service by pointing out wherein our medical education is deficient, and suggesting methods by means of which it may be improved.

VICTOR C. VAUGHAN, M.D., Ann Arbor, Mich.

The letter of Dr. Vaughan was submitted to Colonel Munson who replies:

To the Editor:—Relative to the letter by Colonel Vaughan, referring to a paper by me on "The Needs of Medical Education as Revealed by the War" based on the abstract of the original paper (THE JOURNAL, March 15, 1919, p. 822), it is believed that the paper itself, in full, will probably give the further information desired by him and perhaps others. However, certain points may here be briefly touched on for further clearness.

In the first place, the general qualifications of the great majority of medical men entering the service were good. To say that all were good would be untrue. To enumerate merely the good qualities would avoid the requirements of the above mentioned subject, assigned me. The paper does not represent criticism. It is an effort to make a diagnosis of a symptom-complex apparently presented by the professional body and to suggest a remedy. Possibly both the interpretation of the symptoms and the remedy are faulty; but the paper serves its purpose if it draws the attention of such sound thinkers as Colonel Vaughan to what may be opportunities of further usefulness in the betterment of the profession.

In replying to his letter, a copy of which he kindly sent me, it may be well to state that the examinations were conducted, except perhaps for the brief period of a very few weeks at the outset of the war, and on a wholly insignificant number of new officers, entirely by temporary officers of the Medical Corps. In the examinations held by them in camps, the examining boards were composed of experts in the civil life from which they came and to which probably most or all have already returned. Any findings they made are thus the findings of the civil profession in uniform in respect to its own members. I myself found no one unfit, as might be inferred from Colonel Vaughan's letter, but merely happened to be asked to express the conclusions reached by the representatives of the profession above mentioned.

It would seem that some of the categorical questions propounded by Colonel Vaughan do not relate to the subject of the paper. I can only say that when the vast majority of medical officers of all services demonstrated their efficiency and patriotism in whatever fields of duty fell to their lot, comparison is unnecessary. There is glory enough for all in the achievements of those who composed the Medical Service of the Army.

I am afraid that Colonel Vaughan tends to reason from the particular to the general when he says that he interprets my paper as "an official condemnation of the professional attainments of the hand picked civilian medical men." Such, of course, was neither possible nor intended. But its purpose was to point out the possible nature and location of the scattered sources of what appears to be professional weakness, so that the eminent leaders of professional education and thought in this country, of which Colonel Vaughan is such a distinguished exponent, may, as they see fit, institute inquiry of their own into the matter of fact and remedy. Sometimes the impersonal point of view of an outside observer affords another opportunity for estimate.

Of course, it is not possible at this time for me to comply with Colonel Vaughan's request to state explicitly wherein the former students of his school have failed. I do not know that any have failed. In a school of the high standards which have been set by him, the proportion of men found not well qualified by the military examining boards would presumably be relatively very small. That a certain few of such graduates, even though originally qualified, may have later lacked such ambition or opportunity as might cause them to lag in the march of progress is perhaps also true.

That the medical profession still has its imperfections will be admitted by all conversant with the matter. During the last fifteen years a professional house clearing has been carried out in respect to medical educational institutions, and

professional standards have been elevated. Some of the faults mentioned in my paper, especially of the more elderly men, are relics of this darker professional era. Time will solve this phase of the problem.

But there are other points in which defect would seem to be apparent. These defects are those recognized by every physician who attends medical society meetings. He recognizes that there is a certain proportion of their membership that does not come up to desirable professional standards. The war, by stripping away individual environment and placing all on the general level, has more clearly revealed these professional inequalities. The examining boards in the training camps brought them into strong relief.

Colonel Vaughan asks for information as to how these inequalities may be remedied. He and the other eminent medical men who have made such matters their life study are far better qualified than I am to work out the answer sought. But if there are divergences, and some tend to dip below the proper standards of professional competence, recognition of this fact necessarily implies the duty of attempting betterment by all interested.

Accordingly there are certain matters of such general nature that even I might venture an opinion on them. All are touched on in the original paper, and the following is merely a summary. It is therefore suggested:

(*a*) That all candidates for matriculation for the degree of Doctor of Medicine be given psychologic tests to determine their possession of mental qualities suitable for effectively taking up such an exacting science. These tests are now being employed in the hiring of artisans, clerks, etc., with a view to determining probable efficiency in their less scientific vocations.

(*b*) That medical schools whose curriculums still appear substandard or imperfect institute proper remedy.

(*c*) That such measures be taken as may be possible to insure that practitioners shall not unduly retrograde professionally after graduation. Some influences operating to interfere with keeping up with professional progress are personal problems, relating to initiative, finance, environment or other matters. Others may be favorably affected through medical societies, meetings, etc. The encouragement of the profession, and especially of the less well equipped type, to take postgraduate courses of study at periodic intervals would be very valuable.

(*d*) That more exact standards of qualification in certain important specialties be required, and that those be recognized by special degrees or certificates, as is now the case, for example, with the Doctor of Public Health degree.

These suggestions do not imply anything impracticable. No one knows the mental attainments of the medical profession better than Colonel Vaughan, and I am sure that the matter of the acceptance of such suggestions, in whole or in part, may be safely left to him and his distinguished colleagues in medical education in this country.

EDWARD L. MUNSON, M.D., Washington, D. C.
Brig.-Gen., M. C., U. S. Army.

PROTEST INCREASE IN TAX UNDER NARCOTIC LAW

To the Editor:—It seems that another outrage is about to be perpetrated on the medical profession of this country. I am in receipt of a demand from the collector of internal revenue for this district for the payment of $1.50 for a narcotic license for the period from Jan. 1 to June 1, 1919. I have already paid for and secured a license covering the same period, and would like to know what power and authority they have to demand the payment of an additional tax. I have written the Internal Revenue Office propounding the following queries:

1. Is this license canceled by the act of Congress assessing the additional tax?

2. If so canceled should I not receive credit for the amount of tax already paid?

3. If not canceled, why the demand for the purchase of an additional license?

Something should be done to protect the interests of those who responded to the call to assist the nation in her hour of need and who are now compelled to start anew in the practice of their profession.

O. F. MILLER, M.D., Byesville, Ohio.

To the Editor:—The recent increase in the tax required of physicians under the Harrison act is simply another example of what the profession has submitted to in the last few years. It is presumed that when a man is given a license to practice medicine he is competent to do so. The Harrison act practically denies that inference and imposes on the profession a tax before we can use certain drugs. Foolishly and tamely we submitted to this injustice, and now we are having further evidence in the increase of amount required to allow us to practice and use our judgment as to what drugs we shall employ. . . . The Harrison act may be the correct solution of the narcotic problem. I have positive doubts on that question; and if the profession is now going to sit quietly and allow the latest imposition to pass without protest, you can rest assured that something else will come up before long. . . .

We allowed ourselves to be imposed on to the extent of paying for the carrying out of the Harrison act. The American Medical Association, while not a political organization, should at its next meeting send a message to Congress that will not leave a doubt in the minds of that eminent body as to our feelings on the matter.

F. H. JACKSON, M.D., Houlton, Maine.

To the Editor:—Under the Harrison act we paid the required $1 license. Nine months later we are informed that Congress has increased the tax to $3 per annum and that we remit to the collector of internal revenues $1.50 for the first half of 1919. What puzzles me, and I suppose a number of other men, is what became of our tax money previously paid, and why were we not credited with the difference? It is not the amount but the principle of the thing we do not like. I suppose it is like the army game. You do what you are told and ask no questions.

ERWIN C. CARY, M.D., Reedsville, Wis.

To the Editor:—I am writing to get information that you may have in regard to the new law affecting the Harrison Narcotic Law. We have all no doubt paid our $1 which gives us a license up to July 1, 1919. Now are we to pay an extra $1.50 from Jan. 1, 1919, to July 1, 1919, or the balance due between the old and new fee? K. E. B.

To the Editor:—Probably every practicing physician in the United States received notice to remit $1.50 to the internal revenue collector of his district to pay for a special tax stamp in accordance with the law passed in 1918 and effective Jan. 1, 1919. Every practicing physician at this time has conspicuously posted in his office a special tax stamp which attests that he has paid his fee until June 30, 1919, regardless of what new law may have been passed. Admitting that the raise in rate during the life of the 1918-1919 tax stamp is legal and nullifies the internal revenue collector's receipt, it is still odd that we are not credited with the 50 cents that undoubtedly was paid in 1918 and applies to the 1919 period from January 1 to June 30. The collector, however, overlooks this credit and asks for the entire $1.50.

In order to pay this little tax it is necessary for a great many physicians, in small towns, to secure a money order for the amount, the fee for this being 3 cents, and also to supply a stamp, another 3 cents, making 6 per cent. on the dollar paid to the government for the sending of the tax to the government.

Why not take steps toward inducing the collectors to at least furnish franked envelops to those paying the revenue tax? I respectfully suggest to physicians that each person sending a remittance for the revenue tax drop the letter containing the remittance into the postoffice without a stamp thereon. The collector will be duly notified, and he will be required to expend 3 cents to send a 3 cent stamp to obtain the remittance. A concerted action by physicians would make the revenue department take notice, and try to save the 6 cents. B. B. S

[Comment.—The original Harrison law, approved Dec. 17, 1914, provided that "every person, partnership, association, company or corporation importing, manufacturing, producing, compounding, selling, dealing in, dispensing or giving away opium or coca leaves or any of their compounds or derivatives" must register on or before the first day of July annually and pay a special tax of $1 per annum. Under this provision, physicians as well as others were required to register and pay the tax. The registration and the tax paid in June, 1918, covered the period to July 1, 1919. The Revenue Act of 1918, approved Feb. 24, 1919, provides in addition to requiring annual registration on or before the first of July of each year that "every person who on Jan. 1, 1919, is engaged in any of the activities above enumerated (this enumeration being the same as in the original act) shall within thirty days after the passage of the act make like registration and pay the proportionate part of the tax for the period ending June 30, 1919." The act then provides for the following special tax in place of the old general tax of $1: "Importers, manufacturers, producers and compounders, $24 per annum; wholesale dealers, $12 per annum; retail dealers, $6 per annum; physicians, dentists, veterinary surgeons, and other practictioners lawfully entitled to distribute, dispense, give away, or administer any of the aforesaid drugs to patients upon whom they in the course of their professional practice are in attendance, shall pay $3 per annum." There is no provision for deduction or credit for the remaining portion of the tax paid under the old law. This would amount to 50 cents for the period from Jan. 1, 1919, to July 1, 1919. Internal revenue collectors for the various districts are now sending out notices and blanks to physicians directing them to return the registration blank with the proportionate tax of $1.50 before April 25, 1919. District internal revenue collectors are acting under instructions from the commissioner of internal revenue at Washington, and have no option regarding the amount collected or the time when it is due. Congress is responsible for the law, and the commissioner of internal revenue and the secretary of the treasury are responsible for its interpretation and administration. In regard to the suggestion of B. B. S., the district collectors would have no authority to furnish franked envelops and could not do so without instructions from the Treasury Department at Washington.—Ed.]

GREETINGS FROM ROUMANIA

To the Editor:—More than 250 English, French and Roumanian physicians, at a fraternal banquet on the occasion of the Allied victory and the delivery of Roumania by the Allied army, send to the American Society of Medicine their warm and enthusiastic homage of admiration and profound esteem. The United States of America may be proud of the medical men who have accomplished wonders of devotion and self-abnegation. On this day of triumph our thoughts go with infinite thankfulness to the United States of America, glorious and victorious protector of the right and liberty of the people.

Long Live the United States of America, forever glorious and favoring the emancipation of nations.

Asociatiunea Generala a Medicilor din Romania,
Dr. Mirinesco, President,
Dr. Jean Jiano, Secretary.

MEDICAL COLLEGE FUND NOT REDUCED

To the Editor:—A news item published in The Journal recently indicated that the appropriations for the College of Medicine of the University of Nebraska had suffered considerably at the hands of the legislature. I am pleased to report that the reductions proposed by the house committee were not permitted to stand, and a slight change in the wording of the bill gives the College of Medicine the entire amount requested by the board of regents. A total of $380,000 for the ensuing biennium is provided by the bill for the College of Medicine and University Hospital of the University of Nebraska at Omaha.

Irving S. Cutter, M.D., Omaha.
Dean, University of Nebraska College of Medicine.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SPALTEHOLZ METHOD OF CLEARING SPECIMENS

To the Editor:—Please inform me where I may obtain detailed information concerning the Spalteholz method of clearing tissues.

A. Poska, M.D., Seattle.

Answer.—We quote the following from an article by Sabin in Contributions to Embryology, 3, No. 7, Carnegie Institution of Washington, 1915, which contains the chief features of Spalteholz' method, with modifications by Sabin and others:

In general the essentials of the method are, first, fixation in formaldehyd; second, a thorough bleaching of the tissues with hydrogen peroxid to remove the hemoglobin and other pigments; third, dehydration; and, fourth, clearing the specimens in an oil which has the same index of refraction as the tissues. As applied to embryonic tissues, the method, developed by Professor Spalteholz, is as follows: The specimens, which have been injected with India ink, are fixed for from twenty-four to forty-eight hours in 5 and 10 per cent. liquor formaldehydi. Commercial formaldehyd solution is slightly acid, which is an advantage for the India ink injections, since the ink diffuses in an alkaline solution. Specimens which have been injected with silver nitrate are ruined by fixation in formaldehyd, because the silver salt is changed to a white precipitate which obscures the vessels. If injections of bone are desired, the formaldehyd solution may be made slightly alkaline and the diffusion of the ink prevented as much as possible by tying off all vessels before fixation. For large fetuses, which are to be cleared in toto, Dr. P. G. Shipley has found that the subsequent bleaching is made easier by washing the specimen in running water before fixation, thus removing much of the hemoglobin. After fixation, the specimens are washed in running tap water from twelve to twenty-four hours, followed by distilled water to remove the formaldehyd. The bleaching is done in hydrogen peroxid. Spalteholz adds a few drops of ammonia to precipitate the barium salts. This is not necessary with barium-free oxid. For adult tissues, Spalteholz uses undiluted peroxid; for the embryonic tissues about 2 to 3 per cent. is the best strength. The small embryos with ink injections take about twenty minutes to bleach; for the silver specimens, from two to three minutes suffice, and they must be watched constantly and the bleaching stopped before the silver is affected. Following the bleaching, the specimens must be washed thoroughly in running water and in distilled water. The dehydration may be begun with 50 per cent. alcohol and the percentage increased successively by five points or less. After two changes of a good grade of absolute alcohol, the specimens are passed through changes of benzene into the synthetic oil of wintergreen. The small amount of benzene which is carried over evaporates quickly, and the few bubbles which develop in the bleaching process can be removed with needles. The specimens may be made permanent in balsam.

Spalteholz' method is described by him in his book, "Ueber das Durchsichtigmachen von menschlichen und tierschen Präparaten, Ed. 2, Leipzig, S. Hirzel, 1914.

For this and additional methods of clearing tissues, reference may be made also to Guyer, M. F.: Animal Micrology, University of Chicago Press, 1917, p. 102.

NUMBER OF DEATHS AMONG PHYSICIANS IN THE UNITED STATES AND CANADA FROM 1915 TO 1919

To the Editor:—Please inform me how many physicians died and how many medical students graduated in the years 1915, 1916, 1917 and 1918.

Henry S. Murray, Jr., M.D., New York City.

Answer.—The approximate number of deaths among physicians of the United States and Canada during the four years were: 1915, 2,818; 1916, 2,524; 1917, 2,645, and 1918, 3,008. During the same four years the number of medical students gratuating were: 3,854, 3,724, 3,694 and 3,077.

REJECTIONS IN THE DRAFT AND THEIR CAUSES

To the Editor:—1. Has the United States government published any statistics relating to the proportion of rejections in the late draft to those who passed successfully?

2. Has it published anything relating to the cause of these rejections?

Charles J. Foote, M.D., New Haven, Conn.

Answer.—1. According to the first and second reports of the Provost Marshal-General, the total number of registrants under the first draft was 9,586,508, of which 2,510,706 were given physical examinations, 1,779,950, or 70.89 per cent., were accepted, and 730,756, or 29.11 per cent., were rejected. In

the second draft, the total number of registrants was 9,952,735, of which 3,208,446 were examined. Of these, 2,259,027, or 70.41 per cent., were accepted, and 949,419, or 29.59 per cent., were rejected. In the two drafts, therefore, 19,539,243 men were registered. Of these, 5,719,152 were examined, of whom 4,038,977, or 70.65 per cent., were accepted, and 1,680,175, or 29.35 per cent., were rejected for physical reasons.

2. No complete tabulation has as yet been published regarding the causes for rejection. Partial reports on small groups of rejections show that out of 10,000 rejections, 2,224, or 21.68 per cent., were for defective vision; 871, or 8.5 per cent., for defective teeth; 766, or 7.47 per cent., for hernia; 609, or 5.94 per cent., for defective ears; 602, or 5.87 per cent., for heart disease; 551, or 5.37 per cent., for tuberculosis; 465, or 4.53 per cent., for mental defects; 438, or 4.37 per cent., for venereal diseases; 416, or 4.06 per cent., for physical underdevelopment, and 387, or 3.77 per cent., for nervous diseases, with numerous other defects contributing from 1 to 2 per cent.

PROFLAVINE OLEATE

To the Editor:—In THE JOURNAL, March 15, 1919, p. 830, is an abstract of an article on proflavine oleate. I have the latest edition of the U. S. Dispensatory and can find nothing in reference thereto. Would you kindly give me some information about the preparation and where it can be obtained?

HOWARD LANKESTER, M.D., St. Paul.

ANSWER.—Nothing appears to have been published with regard to the preparation of proflavine oleate except the statement that it is the oleic acid salt of the base proflavine. Proflavine is the soluble sulphate of 3,6-diaminoacridine. As far as we know, proflavine oleate is not obtainable in the United States.

Proflavine has been proposed in England for use as a wound antiseptic, based on the work chiefly of C. H. Browning and his associates, but its usefulness has been seriously questioned in the British medical journals. Recently, Browning has proposed the use of proflavine oleate; he states that it is comparatively insoluble in water; but when it, or the ointment containing it, is shaken with serum, the latter dissolves sufficient of the compound to acquire antiseptic properties. The ointment used by Berkeley and Bonney (reported in THE JOURNAL'S abstract) contained 1 per cent. proflavine oleate in a base of equal parts by weight of petrolatum and calcium carbonate.

BUTTERMILK THERAPY

To the Editor:—1. Please state where I can get reliable information on buttermilk therapy. Is it possible for me to get tablets which I can add to sweet milk which will make it a good substitute for buttermilk when buttermilk is not obtainable?

2. What is it in buttermilk that makes it "agree so well" with so many people?

Please do not use my name.

M.D., Wyoming.

ANSWER.—1. For reliable information with regard to new therapeutic measures and reliable brands of drugs proposed for them, consult New and Nonofficial Remedies. As regards sour milk therapy, this book contains a chapter which discusses the probable value of the Metchnikoff sour milk therapy. The book also describes those brands of tablets which the Council on Pharmacy and Chemistry has found to be reliable and exploited decently.

2. Probably a number of causes contribute to the fact that buttermilk is well borne in certain cases of indigestion. Among these are the beneficial effect resulting from the change of diet, and the fact that the protein of milk is partially digested in the process of souring.

CARBON TETRACHLORID AS A FIRE EXTINGUISHER

To the Editor:—I am anxious to ascertain the nature of the substance or compound used in automobile fire extinguishers (mine is a Pyrene). The fluid is highly volatile, with an odor much like carbon bisulphid; but it is not inflammable or a supporter of combustion. Possibly you know or could learn what it is composed of. I shall be pleased to send a sample if you desire.

JOSEPH MARPLE, M.D., Los Angeles.

ANSWER.—According to the United States Dispensatory, "Pyrene" is the trade name for carbon tetrachlorid, when sold as a fire extinguisher. The odor mentioned is probably due in part to some carbon disulphid; this impurity is present in certain commercial grades of carbon tetrachlorid.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARKANSAS: Little Rock, May 13. Sec. Eclectic Bd., Dr. C. F. Laws, 803½ Garrison Ave., Ft. Smith; Sec. Regular Bd., Dr. T. J. Stout, Brinkley.

NATIONAL BOARD OF MEDICAL EXAMINERS: Philadelphia, June 2-7. Sec., Dr. J. S. Rodman, 1310 Medical Arts Bldg., Philadelphia.

NEVADA: Carson City, May 5. Sec., Dr. S. L. Lee, Carson City.

NEW MEXICO: Sante Fe, April 14-15. Sec., Dr. W. E. Kaser, East Las Vegas.

NEW YORK: Albany, Buffalo, New York and Syracuse, May 20-23. Mr. George M. Wiley, director, Exam. and Inspections Div., State Edu. Bldg., Albany.

New York September Examination

Mr. George M. Wiley, director, Examinations and Inspections Division, reports the written examination held at Albany, Buffalo, New York and Syracuse, Sept. 24-27, 1918. The examination covered 8 subjects and included 80 questions. An average of 75 per cent. was required to pass. Of the 91 candidates examined, 61 passed and 30 failed. The following colleges were represented:

College	Year Grad.	No. Licensed
PASSED		
Chicago Homeopathic Medical College	(1896)	1
Boston University	(1912)	1
Harvard University	(1914) (1918)	2
Tufts College Medical School	(1902)	1
Albany Medical College	(1917) (1918)	2
Columbia University	(1918)	7
Cornell University	(1916) (1917) (1918, 5)	7
Fordham University	(1917, 2) (1918, 3)	5
Long Island College Hospital	(1917) (1918, 3)	4
New York Homeo. Med. Coll. & Flower Hosp.	(1918)	11
New York Med. Coll. and Hosp. for Women	(1918)	1
Syracuse University	(1916) (1917, 2)	3
University & Bellevue Hosp. Med. Coll.	(1917))1918, 11)	12
University of Pennsylvania	(1918)	3
Queen's University	(1917)	1
FAILED		
Howard University	(1916)	1
Tufts College Medical School	(1918)	1
University of Michigan Medical School	(1918)	1
Columbia University	(1915) (1918, 4)	5
Cornell University	(1918)	1
Fordham University	(1916)	1
N. Y. Homeo. Med. Coll. & Flower Hosp.	(1916, 4) (1918)	5
University & Bellevue Hosp. Med. Coll.	(1918)	2
University of Buffalo	(1917)	1
Jefferson Medical College	(1918)	1
Medico-Chirurgical College of Philadelphia	(1916)	1
University of Pennsylvania	(1915) (1918)	2
Woman's Med. Coll. of Pennsylvania	(1913)	1
Medical College of the State of S. C.	(1911)	1
Medical College of Virginia	(1917)	1
Queen's University	(1914) (1916)	2
University of Naples	(1897)	1
University of Berne	(1910)	1
Syrian Protestant College	(1914)	1

Mr. Wiley also reports that 2 candidates were licensed by endorsement of credentials, and 1 by reciprocity. The following colleges were represented:

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
Western Reserve University	(1917)	Ohio

College	Year Grad.	No. Indorsed
LICENSED BY INDORSEMENT		
Hahnemann Med. Coll. and Hosp. of Philadelphia	(1881)	1
McGill University	(1904)	1

New York Report

Mr. George M. Wiley, director, Examinations and Inspections Division, reports that 9 candidates were granted certificates by reciprocity; 2 candidates were licensed by indorsement under provisions of Chapter 357, laws of 1917, and 3 candidates were granted reregistration certificates to March 1, 1919. The following colleges were represented:

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
Rush Medical College	(1908)	Indiana
Columbia University	(1916)	New Jersey
Fordham University	(1915)	New Jersey
Long Island College Hospital	(1912)	New Jersey
University & Bellevue Hosp. Med. Coll.	(1899)	New Jersey
Starling-Ohio Medical College	(1914)	Ohio
University College of Medicine	(1910)	New Jersey
University of Virginia	(1915, 2)	Virginia

College	Year Grad.	No. Indorsed
LICENSED BY INDORSEMENT		
Columbian University	(1883)	1
University of Pennsylvania	(1909)	1

Book Notices

Practical Physiological Chemistry. A Book Designed for Use in Courses in Practical Physiological Chemistry in Schools of Medicine and of Science. By Philip B. Hawk, M.S., Ph.D., Professor of Physiological Chemistry and Toxicology in the Jefferson Medical College of Philadelphia. Sixth edition. Cloth. Price, $3.50 net. Pp. 661, with illustration. Philadelphia: P. Blakiston's Son & Co., 1918.

The most important feature of this book is the attention it gives to the methods of determination of different substances, particularly the more important ones, from a clinical point of view. The chapter on acidosis is of distinct value. As the volume deals primarily with physiologic chemistry, the space devoted to the description and enumeration of blood corpuscles or to the description of the morphologic elements of pathologic urine might better be devoted to matters more germane to the subject. If it is the intention of the author to include the excretion of drugs, the chapters on arsenic and mercury are not sufficient; if not, they are out of place. The illustration of the Berthelot-Atwater calorimeter, which could be clearer, should be supplemented by a description of its use or be left out entirely. The space given to the subjects mentioned might be devoted to some such purpose as the methods of quantitative determination of lactic acid. *d*-ribose deserves to be mentioned by name at least. On page 64 it is stated that "the nitrogen in the protein molecule occurs in at least four different forms as follows: I Monamino acid nitrogen, II Diamino acid nitrogen or basic nitrogen, III Amide nitrogen, IV A guanidine residue." No doubt the amid under III is a misprint and should read imid. But the statement is confusing. The nitrogen in I and II occurs in the same form. What is meant is that the protein molecule is made up of various nitrogen-containing components, which may be classified in the manner indicated: I, monamino acids; II, diamino acids; III, substances containing nitrogen in imid form, and IV, substances containing nitrogen as in guanidin. These remarks are not intended to detract from the value of the book as a practical physiologic chemistry; as such it serves a useful purpose in an admirable manner.

Estudio Clínico de la Litiasis Urinaria: Casuística. Cálculos del Riñón, del Uréter, de la Vejiga y de la Uretra. Por el Doctor Angel Pulido Martín, Cirujano del Hospital de San Juan de Dios. Paper. Pp. 238, with illustrations. Madrid: Imprenta del Sucesor de Enrique Teodoro, 1918.

Pulido here reviews the clinical histories of the varied cases of stones of the urinary system, of which he has long made a specialty. He admits at the outset that we still have much to learn in regard to the causes that underlie the formation of calculi, passing then to enumerate the different explanations that have been advanced so far for this condition. The author discusses the various types of calculi, considering in detail symptomatology, diagnosis and treatment. In the chapter on diagnosis, he takes up in succession and at some length the assistance that may be derived from palpation, various types of sounds and explorers, the Bigelow aspirator, the cystoscope, the roentgen rays, the application of anesthesia, and the diagnostic value of the location and character of the pains that may be present.

A Handbook of Colloid-Chemistry: The Recognition of Colloids, the Theory of Colloids, and their General Physico-Chemical Properties. By Dr. Wolfgang Ostwald, Privatdozent in the University of Leipzig. Second English Edition. Translated from the Third German Edition by Dr. Martin H. Fischer, Professor of Physiology in the University of Cincinnati; with Numerous Notes Added by Emil Hatscheck, Cass Institute. Cloth. Price, $3.50 net. Pp. 284, with 63 illustrations. Philadelphia: P. Blakiston's Son & Co., 1919.

The original translation has been revised and brought up to date by the translators. Colloid chemistry as a separate field of investigation is a relatively recent offspring of physical chemistry. Not many books are in existence which attempt to treat the subject comprehensively. The "practical introduction" gives an elementary general and special colloid analysis, that is, the elementary means of recognizing matter in colloidal state from matter not in colloidal state, and the manner of differentiating between various colloidal systems. Part I treats of general colloid chemistry. Paragraph 17 is captioned "The Concept of Colloid-Chemistry," and defines its field thus: "Colloid-Chemistry deals with the relations of the surface energies to other kinds of energy as shown in an especially characteristic way in dispersed heterogeneous systems." Part II treats of the mechanical properties of colloid systems. The book is apparently not intended as an easy introduction for the beginner in colloidal chemistry. It cannot fail to impress the reader with the far-reaching importance of the study of matter in the colloidal state.

War Story of the Canadian Army Medical Corps. By J. George Adami, M.D., F.R.S., A.D.M.S., in Charge of Records, Office of Director General Medical Services, O. M. F. C. Volume 1. Published for the Canadian War Records Office. Cloth. Price 5 shillings net. Pp. 288, with illustrations. London: Colour Ltd., 1918.

Dr. Adami needs no introduction to the medical profession as a writer either on scientific or on literary subjects. He wields a trenchant pen and guides it with a carefully accurate, far-seeing mind. In this instance, he approaches his subject with deep personal sympathy and feeling; the Canadian Army Medical Corps is fortunate in its present historian. This first volume concerns the rise of the C. A. M. C., its assembly, the second battle of Ypres, with the introduction of poison gas, and the establishment of hospital units in France, and other medical units on the line of communication. The next volume is to take up the work of the sanitary section of the first Canadian division, and continue the history of the Canadian Army Medical Corps during 1916. The story is enlivened by many personal notes from the diaries of officers intimately connected with the work. Numerous well drawn maps make clear the descriptions of action in the field. All who took even a remote part in the great conflict will find this a most interesting work.

Medicolegal

Standards for Treatment with Roentgen Rays

(Hunter v. Burroughs (Va.),96 S. E. R. 360)

The Supreme Court of Appeals of Virginia, in a lengthy opinion, affirms a judgment in favor of plaintiff Burroughs for damages alleged to have been occasioned to him by the alleged malpractice of the defendant, a physician, in the treatment with roentgen rays of eczema with which the legs and ankles of the plaintiff were affected. The court says that it should be borne in mind that the case involved two standards of professional skill and care by which the evidence as to the competency and the conduct of the defendant was to be measured: one standard having reference to the technic or mechanical operation of the roentgen-ray apparatus, and the other standard having reference to the possession and use of the professional skill and care incumbent on the defendant with respect to the diagnosis and treatment of the disease of the plaintiff in matters other than the mere mechanical operation of the apparatus.

The two standards mentioned both involved, in this case, the highly specialized art of the treatment of the disease of the plaintiff by roentgen rays; and, so far as they did so, expert testimony before the jury fixing such standards was essential to the support of the verdict of the jury, since otherwise the jury, to the extent of the questions involving such specialized art, would have had no standard in mind by which to measure the other facts proved in the case. Now, as to the mechanical standard of skill and care, there was no expert evidence in the case except the testimony of the defendant and of other expert witnesses for the defendant; but there was sufficient evidence in the case, when measured by the mechanical standard fixed by the testimony of the defendant, to support the verdict of the jury. It is deemed sufficient to mention only the following details of such evidence: There was evidence in the case to the effect that the defendant did not keep an accurate record of the roentgen-ray treatment or any record of the exact "dose" of roentgen rays applied in the several treatments therewith; that if only the standard "dose" had been applied, it was extremely improbable that any bad result would have been caused. The cross-

examination of the defendant tended to show that his memory of the "dose" applied by him in the several treatments was not to be relied on. There were inconsistent statements made by the defendant at different times as to his opinion of the causes of the bad result; and there was other evidence to support a conclusion of the jury that the "dose" in fact applied was not in accordance with the mechanical standard fixed by the expert testimony of the defendant himself. It was true that such testimony did not show that the bad result might not have happened without fault of the defendant; but there was sufficient of such evidence, the credibility and weight of which was for the jury, tending to show that the bad result was more probably due to lack of skill or negligence of the defendant as charged. This degree of proof is all that is required of a plaintiff in a civil case. He is not required to exclude by his proof the possibility of the result complained of having been due to causes for which the defendant is not responsible.

The cause of the injury being the roentgen rays was, however, but one element of fact in the case. As the jury was properly instructed, if the defendant exercised ordinary care and skill in the premises, the plaintiff was not entitled to recover damages, although the injuries complained of were caused by the roentgen-ray treatment; and the question still remained whether the defendant did or did not exercise such care and skill. The court thinks there was sufficient evidence in the case, when measured by the general professional standard, as well as by the mechanical standard of skill and care, to support the verdict of the jury.

It was correct to say that the standard by which the duty of the defendant to make the preliminary tests and examination of the patient before subjecting him to the roentgen-ray treatment had to be tested was whether other like specialists in good standing, in the same or similar localities as the defendant, would have been guilty of the omission to make such preliminary tests and examination, which test had to be applied by measuring the evidence, as it might be introduced on the trial, by the standard fixed by the testimony of experts on the subject. Failure to warn of danger in the treatment was not necessarily negligence, unless there was an assurance of a cure.

Waiver of Privilege by Implied Consent

(Dahlquist v. Denver & R. G. R. Co. (Utah), 174 Pac. R. 833)

The Supreme Court of Utah reverses a judgment obtained by the plaintiff, with direction to grant a new trial, in this personal injury case, on account of the erroneous exclusion of the testimony of a physician as privileged. On his direct examination, the plaintiff himself had testified somewhat in detail concerning the character and extent of his injuries, the pain and suffering endured, and his physical condition before and after the accident. He had also testified concerning the mode of treatment of his injuries and their character as described to him by the physician whose competency to testify was challenged by the plaintiff under the provisions of the Utah statute that:

> A physician or surgeon cannot, without the consent of his patient, be examined in a civil action, as to any information acquired in attending the patient which was necessary to enable him to prescribe or act for the patient.

The court says, on an application for rehearing which it denies, that a majority of the court agreed that where a party voluntarily, in a trial of his own cause, states what his physician did and said respecting the injuries which are the subject of litigation, he should not be permitted to close the mouth of the physician when offered as a witness by his adversary solely on the ground of privilege. That was the question here involved, and the only question intended to be determined. It was not intended to hold that the waiver of privilege opens the door for immaterial or irrelevant questions. The question as to whether or not the plaintiff was afflicted with syphilis was wholly immaterial in this particular case. The plaintiff was in the employment of the defendant as an able-bodied man at the regular wages usual in such employment. This was substantially admitted in the pleadings. If he was injured by the negligence of the defendant, and his permanent recovery rendered more precarious and doubtful by reason of such disease, the court knows of no authority or legal principle under which the defendant could claim immunity either wholly or in part on that account. The questions were therefore immaterial and were objectionable on that ground, but not on the ground of privilege.

It was contended that there is a vital distinction between the terms "waiver" and "consent" in the statutes pertaining to privilege; that where the word "consent" is used it means express consent, and not consent by implication. But counsel did not furnish the court with any authority on the subject supporting such distinction, nor has the court been able to find any. On the contrary, it appeared from their own argument that some statutes relating to privilege render a witness incompetent to testify in such cases and make no provision whatever for a surrender of the privilege either by waiver or consent. Notwithstanding this, the courts in those jurisdictions recognize the doctrine of waiver and find it by implication from the conduct of the party. Certainly, if waiver or consent may be implied under statutes which do not expressly provide for either, it ought not to be considered revolutionary to deduce it from a statute like that of Utah which expressly provides for it. The court is of the opinion that an examination of the several statutes of other states, and the decisions of the courts construing them, will disclose no warrant whatever for the distinction relied on by the defendant.

It was contended that statutes pertaining to privilege should be strictly construed. The court believes the statute should receive a reasonable construction. It does not believe that a statute which excludes testimony calculated to disclose the truth in the trial of a case should receive a rigidly strict construction in favor of the exclusion unless the terms of the statute are such as to leave no doubt that such was the intention of the lawmaking body. The statute of Utah provides that the privilege may be surrendered by consent, and the court is of the opinion that the consent may be implied from the patient's conduct.

The court believes that when a patient, who afterward becomes a party in court, is sworn as a witness in his own behalf and details the treatment applied by his physician, and states what his physician said concerning the injury or disease and its probable effects and consequences, he thereby consents to the physician testifying to the same extent that any other witness might testify if sworn in the case. And the court is convinced that its position is sustained by the great weight of authority.

Society Proceedings

COMING MEETINGS

American Medical Association, Atlantic City, June 9-13.

Alabama State Medical Association, Mobile, April 15.
American Academy of Medicine, Atlantic City, June 9-10.
American Association of Anatomists, Pittsburgh, April 17-19.
American Association of Anesthetists, Atlantic City, June 9-10.
American Physiological Society, Baltimore, April 24-26.
American Proctologic Society, Atlantic City, June 7-9.
American Therapeutic Society, Atlantic City, June 6-7.
Arizona Medical Association, Globe, June 2-3.
Arkansas Medical Society, Little Rock, May 20-22.
Assn. of American Peroral Endoscopists, Brooklyn, N. Y., June 5.
Connecticut State Medical Society, Bridgeport, May 21-22.
Florida Medical Association, Miami, May 20-22.
Georgia State Medical Association, Atlanta, April 17.
Illinois State Medical Society, Peoria, May 20-22.
Iowa State Medical Society, Des Moines, May 7-9.
Kansas Medical Society, Ottawa, May 7-8.
Maryland, Medical and Chir. Faculty of, Baltimore, April 22-24.
Massachusetts Medical Society, Boston, June 3-4.
Michigan State Medical Society, Detroit, May 21-22.
Mississippi State Medical Association, Hattiesburg, May 13-14.
Missouri State Medical Association, Excelsior Spgs., May 26-28
Nebraska State Medical Association, Lincoln, May 19-21.
New Hampshire Medical Society, Concord, May 14-15.
New York State Medical Society, Syracuse, May 6.
North Carolina State Medical Society, Pinehurst, April 15.
Ohio State Medical Association, Columbus, May 6-8.
Oklahoma State Medical Society, Muskogee, May 20-22.
Rhode Island Medical Society, Providence, June 5.
South Carolina Medical Association, Florence, April 15-16.
Texas State Medical Association, Waco, May 13-15.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Insanity, Baltimore

January, 1919, **75**, No. 3

Recent American Classifications of Mental Diseases. E. E. Southard, Chicago.—p. 331.
Analysis of Accuracy of Psychopathic Hospital Diagnoses. L. G. Lowrey, Boston.—p. 351.
Organization of State Hospital Service in Illinois. H. D. Singer, Chicago.—p. 371.
Psychopathologic Observations in Group of Feeble-Minded. E. L. Richards, Baltimore.—p. 379.
Problem of Pulmonary Tuberculosis in Psychiatric Hospital. S. A. Silk, Washington.—p. 393.
Psychologic Treatment of Retarded Depressions. L. P. Clark, New York City.—p. 407.
Critical Review of Pathogenesis of Dementia Praecox, with Discussion of Relation of Psychoanalytic Principles. M. Osnato, M. C., U. S. A. —p. 411.
Rehabilitation in Community of Patients Paroled from Institutions for Insane. S. N. Clark, Chicago.—p. 433.

American Journal of Ophthalmology, Chicago

March, 1919, **2**, No. 3

Ocular Internal Hemorrhage in Case of Bright's Disease. W. E. Kershner, Bath, Me.—p. 177.
Treatment of Trachoma and Chronic Conjunctivitis with Negative Pressure. B. M. Howley, New Brunswick.—p. 180.
Detaching of Bulbar Conjunctiva as Treatment of Trachomatous Pannus. K. Hiwatari, Kyoto, Japan.—p. 183.
Diffraction in Human Eye and Phenomena of Colored Rings Surrounding Luminous Sources. C. Sheard, Columbus, Ohio.—p. 185.
Tendon Tucker. W. Bishop, Minneapolis.—p. 195.
Transplantation of Portions of Vertical Recti for Abducens Paralysis with Successful Result. R. O'Connor, Oakland, Calif.—p. 197.
Case of Double Retinal Separation in Trench Nephritis. G. S. Derby, A. E. F.—p. 199.
Bilateral Tuberculoma of Orbital Lacrimal Glands. H. V. Wurdemann, Camp Lewis, Wash.—p. 201.
Spasm of Accommodation with Disturbance of Ocular Movements of Dental Origin. G. D. Murray, Scranton, Pa.—p. 202.

American Journal of Physiology, Baltimore

March 1, 1919, **48**, No. 2

*Reason for Specific Dynamic Action of Protein. W. E. Burge, Urbana.—p. 133.
Stability of Esterase in Ground Liver Preserved in Glycerol. J. P. Simonds, Chicago.—p. 141.
Mechanism of Ether Hyperglycemia. R. W. Keeton, Urbana, and E. L. Ross, Chicago.—p. 146.
Stimulation by Outward Diffusion of an Electrolyte from Irritable Tissue. W. D. Zoethout, Chicago.—p. 161.
Catalytic Power of Blood and Solid Tissue. F. C. Becht, Chicago. —p. 171.
*Influence of Internal Secretions on Formation of Bile. A. W. Downs, and N. B. Eddy, Montreal, Que.—p. 192.
*Baker's Yeast as Food for Man. P. B. Hawk, C. A. Smith, and R. C. Holder, Philadelphia.—p. 199.
*Compressed Yeast as Food for Growing Organism. P. B. Hawk, H. R. Fisback and O. Bergeim, Philadelphia.—p. 211.
Alterations in Activity of Terrapin's Heart Relative to Slight Changes in P Value of Perfusate. E. C. Andrus, Baltimore.—p. 221.
Comparative Study of Carbon Dioxid Production During Starvation in Planaria. C. M. Child, Chicago.—p. 231.
*Function of Nucleus of Living Cell. V. Lynch, Baltimore.—p. 258.

Specific Dynamic Action of Protein.—Evidence is presented by Burge to show that the amino (NH_2) group in the protein molecule renders protein, or meat, a more effective stimulant to catalase production and hence to heat production than fat, and that the glycerin radical in the fat molecule renders fat more effective in this respect than sugar.

Effect of Gland Extracts on Bile Secretion.—Downs and Eddy found that the amount of bile secreted is increased by secretin, and decreased by epinephrin and by mammary, orchic, ovarian, pancreatic and thymic gland substances. The bile secretion is not affected in a constant or definite manner by the substance of the spleen and thyroid.

Bakers' Yeast as Food for Man.—The metabolism of six men was studied by Hawk and others. Four of the six showed an improved nitrogen balance when fed the yeast diet. Moreover, the yeast diet produced an average daily gain of about 0.4 gm. of nitrogen per man above that noted before yeast was fed. The only interpretation is that these men found yeast a satisfactory article of diet. The yeast may be incorporated with meats, such as hamburg steak, and yields a preparation of very satisfactory taste. If the yeast is dried in a current of air at 105 C. and pulverized it may be substituted for 20 per cent. of the wheat flour used in bread making and yields a product which is very nutritious and of an attractive flavor. The average individual may ingest yeast sufficient to yield from 1 to 2 gm. of nitrogen per day, without securing any laxative effect. When as high as 4 gm. of yeast nitrogen are eaten, a laxative effect is generally observed and in some cases soft diarrheal stools result. It is suggested that this laxative action of yeast may be put to good use in overcoming constipation.

Compressed Yeast as Food for Growing Organism.—The results of these experiments made on rats show that the ordinary household compressed yeast has very important growth-promoting properties.

Function of Nucleus of Living Cell.—The experiments reported by Lynch offer support to the theory that the nucleus is the organ of synthesis. The enucleated cell may move, respire, digest, respond to stimuli and exhibit any activity which is dependent solely on catabolic or destructive processes of protoplasm. The group of phenomena which it never shows are those of growth and of regeneration and division. The phenomena of growth are essentially phenomena of organic synthesis, and the dependence of growth on the nucleus implies the dependence of organic synthesis on the nucleus.

American Journal of Public Health, Concord

March, 1919, **9**, No. 3

Plan for More Effective Federal and State Health Administration. F. L. Hoffman, Newark.—p. 161.
*Adjustments in Health Administration for Industrial Diseases on Account of War. E. R. Hayhurst, Columbus.—p. 169.
Democracy and Public Health Administration. C. J. Hastings, Toronto. —p. 172.
Taking Board of Health to People. B. L. Arms, Jacksonville, Fla.— p. 179.
Supply of Pharmaceutics and Medicines in War Times; Importance and Dangers. C. H. LaWall, Philadelphia.—p. 180.
Sterilization of Bottles for Pasteurized Milk. M. B. Hopkins and J. L. Kelly, Baltimore.—p. 183.
Reconstruction and the Child. S. J. Baker, New York City.—p. 185.
Reactions of Bacteriologic Media. J. F. Norton, Chicago.—p. 190.
Public Health Nursing in Extracantonment Zone. M. E. Lent, Washington.—p. 193.
Industrial Lighting. C. E. Clewell, Philadelphia.—p. 196.
Sanitation and Conservation in Municipal Utilities of Rochester, N. Y. E. A. Fisher, and J. F. Skinner, Rochester, N. Y.—p. 200.
Effect of Food Control on Food Supply. H. E. Barnard, Indianapolis. —p. 203.

Health Administration for Industrial Diseases.—Abstracted in The Journal, Jan. 4, 1919, p. 67.

American Review of Tuberculosis, Baltimore

March, 1919, **3**, No. 1

Experimental Tracheo-Bronchial Node Tuberculosis Together with Brief Consideration of Several Phases of Tuberculous Infection Suggested Thereby. A. K. Krause, Baltimore.—p. 1.
*Laboratory Observations on Influenza Epidemic in Government Tuberculosis Hospital. H. J. Corper and E. D. Downing, New Haven. —p. 10.
*Results of Sanatorium Treatment of Pulmonary Tuberculosis: Tuberculin. B. H. Waters and A. Peters, Jr., Loomis, N. Y.—p. 25.
Tuberculosis Control in an Army Cantonment. C. L. Wheaton, Camp Grant Rockford, Ill.—p. 39.
Rupture of Mediastinum During Artificial Pneumothorax. C. A. Wilson and R. G. Jones, Silver City, N. M.—p. 44.

Influenza Epidemic in Tuberculosis Hospital.—The influenza bacillus was found by Corper and Downing in the nose and throat of a fairly large percentage (14 per cent.) of apparently normal individuals, without symptoms of influenza, at the United States General Hospital No. 16, during the 1918 influenza pandemic. The organism was, however, isolated from a larger percentage (28.5 per cent.) of patients presenting symptoms of influenza. The influenza bacillus was isolated from the nose and throat of 24 per cent. of consumptives who were free from symptoms of acute disease, while

in those presenting such symptoms the bacillus was obtained in 62 per cent. of the cases. In cases of typical uncomplicated influenza, the influenza bacillus was obtained in the sputum from 75 per cent. of the cases, while in patients presenting a bronchopneumonia, the organism was obtained in 100 per cent. of the cases. The influenza bacillus was not the only organism obtained from the sputum of influenza patients, but was commonly accompanied by some other organism, most frequently the pneumococcus (Type I, II, III or IV) or streptococcus. The latter organisms did not, however, occur as consistently as the influenza bacillus. Blood cultures in cases of influenza were uniformly negative for the influenza bacillus. Necropsy findings on eleven cases of influenza bronchopneumonia (seven of which presented pulmonary tuberculosis in some form; four active and three healed cases) revealed the influenza bacillus in the lungs in ten cases and the pneumococcus in eight. Influenza bacilli were never found in the blood, but pneumococci were found in three of the seven cases examined. The presence of the influenza bacillus in the sputum, during influenza epidemics, seems to be of definite diagnostic value, especially when taken in conjunction with clinical and roentgenologic findings.

Tuberculin in Treatment of Pulmonary Tuberculosis.—All things considered, this study by Waters and Peters does not furnish very impressive evidence of the value of tuberculin as a therapeutic agent in pulmonary tuberculosis. Its influence, if any, was in all probability extremely limited.

Archives of Pediatrics, New York

January, 1919, **36**, No. 1

Vaccine Therapy—Most Rational and Effective Method of Treating Whooping-Cough. C. J. Bloom.—p. 1.
Use of Vegetable Milk in Children. H. D. Chapin, New York.—p. 28.
Complement-Fixation Test for Tuberculosis in Infancy and Childhood. H. Heiman, New York.—p. 32.
Cornell Nutrition Class. M. G. Wilson, New York City.—p. 37.

Boston Medical and Surgical Journal

March 27, 1919, **180**, No. 13

Insufflation of Oxygen in Pneumonia. S. J. Meltzer, New York City. —p. 349.
Pneumonia and Empyema. H. Gray, Camp Devens, Mass.—p. 351. To be cont'd.
Case of Congenital Atresia of Esophagus. J. L. Huntington, J. H. Young, and N. C. Foot, Boston.—p. 354.

Colorado Medicine, Denver

March, 1919, **16**, No. 3

War's Influence on Prevailing Medical Theories. E. J. A. Rogers, Denver.—p. 52.
Heredity. G. A. Moleen, Denver.—p. 57.
Roentgenologic Evidence of Early Tuberculosis. F. B. Stephenson, Denver.—p. 61.
Inoperable Cancer. C. E. Tennant, Denver.—p. 66.

Florida Medical Association Journal, St. Augustine and Palatka

February, 1919, **5**, No. 8

Caudal Anesthesia. G. H. Hodgson, Tampa.—p. 135.
Diagnosis of Tubal Pregnancy. R. R. Sullivan, Lakeland.—p. 137.
Mobilizing Nurses of America for Peace. J. A. Delano, Washington, D. C.—p. 139.

Indiana State Medical Association Journal, Fort Wayne

March 15, 1919, **12**, No. 3

*Bacteremia and Toxemia as They Affect Single Organs. H. O. Pantzer, —p. 61.
Preliminary Thyroid Operations. G. Link, Indianapolis.—p. 64.
Malignant Epithelial Growths of Thyroid. H. K. Bonn, Indianapolis. —p. 67.
*Factors of Safety in Abdominal Hysterectomy. D. Guthrie, Sayre, Pa.—p. 71.
Soldier's Heart. G. S. Bond, Indianapolis.—p. 74.

Bacteremia and Toxemia.—Abstracted in THE JOURNAL, Nov. 30, 1918, p. 1855.

Abdominal Hysterectomy.—Abstracted in THE JOURNAL, Nov. 30, 1918, p. 1854.

Journal of Experimental Medicine, Baltimore

April 1, 1919, **29**, No. 4

*Effect of Carbon Dioxid in Cultivation of Meningococcus. F. L. Gates, New York City.—p. 321.
Cicatrization of Wounds. P. L. du Nouy, Compiègne, France.—p. 329.
*Wassermann Reaction: Using Cholesterolized Antigen According to McIntosh and Fildes. P. A. Lewis and H. S. Newcomer, Philadelphia.—p. 351.
*Migration of Parasites as Cause of Anemia in Estivo-Autumnal Malarial Infections. M. R. Lawson, New London.—p. 361.
*Functional Value of Newly Formed Connective Tissue. P. A. Lewis and H. S. Newcomer, Philadelphia.—p. 369.
*Persistence of Virus of Poliomyelitis in Nasopharynx. S. Flexner and H. L. Amoss, New York City.—p. 379.
*Renal Function Influenced by Intestinal Obstruction. I. McQuarrie and G. H. Whipple, San Francisco.—p. 397.
*Renal Function Influenced by Proteose Intoxication. I. McQuarrie and G. H. Whipple, San Francisco.—p. 421.

Cultivation of Meningococcus.—The experiments reported by Gates are the outcome of observations made in applying the recommendation of Cohen and his associates that meningococci be grown at a partial oxygen tension, obtained by substituting carbon dioxid for approximately 10 per cent. of the air in a closed container. Gates found that the meningococcus is not a "micro-aerophil." It grows equally well in atmospheres containing from 15 to 40 per cent. oxygen. If small amounts of carbon dioxid affect the growth of the meningococcus on an artificial medium it is by changing the reaction of the medium, not by slightly reducing the oxygen tension of the surrounding air. The fallibility of titrating the total acidity of a medium is again clearly demonstrated. A reaction favorable to the meningococcus cannot be determined from the total titratable acidity, but depends solely on the hydrogen ion concentration of the medium. The optimum for the meningococcus is approximately at p_H 7.4. The value of a moist chamber in the cultivation of the meningococcus is shown by unusually luxuriant growth when other conditions are also favorable.

Wassermann Reaction.—The question of the Wassermann reaction as practically applied was reviewed by Lewis and Newcomer with the purposes of (1) reconsidering the suitability of the cholesterolized antigen, and (2) examining the merits of the newer Noguchi system. They found that the Wassermann reaction carried out according to the method of McIntosh and Fildes, with cholesterolized antigen and with certain allowances for the presence of native antisheep amboceptor, leads to about the same result as when it is done according to the recent proposal of Noguchi, with the native human complement and acetone-insoluble lipoids as antigen. The differences are such as to suggest that from the point of view of diagnosis the Noguchi method is the more conservative but that there is definite advantage in using two methods as distinct in origin of materials as these, partly for the purpose of control and partly in hope of acquiring new information of importance. As a measure of control of treatment, the cholesterol antigen appears to the authors to be the more valuable. The Wassermann reaction alone, by whatever method it may be done, can only be used in the diagnosis of syphilis in conjunction with presumption based on other grounds. That it fails to appear in a considerable percentage of syphilitics is well known. That the reaction is positive in other conditions is not so generally recognized. Fresh instances of this in certain febrile cases are here recorded.

Estivo-Autumnal Malarial Infections.—The anemia in malarial infections, in Lawson's opinion, is explained by the fact that each parasite destroys several red corpuscles. Reduction of hemoglobin out of proportion to the loss of red corpuscles is explained by the fact that there is always a partial loss of hemoglobin in certain of the surviving corpuscles due to parasitic action. Migration of parasites occurs in all estivo-autumnal infections.

Newly Formed Connective Tissue.—The tensile strength of newly formed connective tissue was thus evaluated by Lewis and Newcomer: Adult rabbits were anesthetized with ether. With various degrees of aseptic precaution the Achilles tendon was exposed and sectioned. At various intervals thereafter the animal was killed and the leg amputated at the hip

and suspended by the knee through a strong wire loop as an intermediary to a stout chain hung from the ceiling. With a similar wire loop a pail was suspended from the hock. Into this pail clean sand was run from a funnel at a uniform rate and from a uniform height. When a break occurred the flow of sand was stopped, the pail, its contained sand, and all the apparatus coming away with the foot were weighed, the result being recorded in grams as the tensile strength of the newly formed tissue.

Virus of Poliomyelitis in Nasopharynx.—The results of the experiments reported by Flexner and Amoss conform closely with clinical experience in the United States, at least, and especially with the observations made by epidemiologists in the course of the wide epidemic in New York state and elsewhere during the summer and autumn of 1916. The conclusion reached at that time was to the effect that the communicability of the disease was a phenomenon chiefly of the early stages, while the frankly paralyzed person and the convalescent were to be feared much less. In the authors' experiments, infection was secured with tissues obtained during the first week, approximately, of the disease but not at the later periods. The deduction from the experiments reported is to the effect that the virus is regularly present in the nasopharynx in cases of poliomyelitis in the first days of illness, and especially in fatal cases; that it diminishes relatively quickly as the disease progresses, except in rare instances; and that it is unusual for a carrier state to be developed. Hence the period of greatest infectivity of patients would appear to be early in the disease, which is probably the time at which communication of the virus from person to person takes place. Available evidence proves that healthy carriers of the virus occur. The authors do not, however, possess data which indicate the frequency with which carriage arises. The fact that even after a severe and wide epidemic, such as occurred in the United States in 1916, the disease may virtually disappear within two or three years, points to the probability that enduring carriers of the active virus, whether healthy or chronic, are of exceptional occurrence.

Renal Function in Intestinal Obstruction.—The eliminative function of the kidneys during periods of intoxication due to intestinal obstruction was investigated by McQuarrie and Whipple. Associated with the intoxication of intestinal obstruction there exists a definite impairment of the excretory function of the kidneys. The degree of functional depression corresponds roughly with the intensity of the clinical intoxication. The decrease in the uria ratio and in the capacity of the kidneys to excrete sodium chlorid is more marked than is the percentage decease of phenolsulphonephthalein elimination. The great increase in the nonprotein nitrogen of the blood usually observed in acute intestinal obstruction, which has hitherto been explained as being due entirely to an increased rate of protein catabolism, is due in part to retention of the products released from the injured cell protein. The authors suggest that it is probable that the impaired renal function is due to direct action of the toxic substances on the renal epithelium. The actual demonstration of this renal injury is perhaps the strongest evidence so far obtained to prove the presence of an actual toxic substance in the blood during intestinal obstruction. This obscure disability of the kidneys during the height of the intoxication of acute ileus should always be considered in the clinical management of this condition. It may also serve as a guide to indicate the degree of intoxication.

Renal Function in Proteose Intoxication.—The outstanding fact presented by McQuarrie and Whipple is that the injection of the toxic proteose obtained from the contents of the obstructed small intestine causes a definite impairment of the eliminative function of the kidneys as shown by a decreased capacity to excrete urea, sodium chlorid, and phenolsulphonephthalein. This involvement of the renal function is similar to that shown by the preceding report to accompany the intoxication of intestinal obstruction. The observed depression of function is readily demonstrable even when large amounts of fluid and urea, dye, or salt are injected directly into the blood stream. There is in all probability a temporary injury of the kidney cells, since the most important extrarenal factors have been largely eliminated in the experiments. There is no appreciable impairment of the renal function following the injection of a number of other proteose preparations from a variety of sources. This study affords new evidence in favor of the view that the function of an organ can be profoundly disturbed for a time without any demonstrable anatomic lesions. The repair of this type of injury promptly follows the disappearance of the intoxication, and is functionally and anatomically perfect.

Journal of Infectious Diseases, Chicago

April, 1919, **24**, No. 4

Studies in Bacterial Nutrition: Utilization of Nitrogenous Compounds of Definite Chemical Composition. S. A. Koser and L. F. Rettger, New Haven, Conn.—p. 301.
*Rapid Methods for Bacteriologic Analysis of Milk. J. E. Simmons, Madison, Wis.—p. 322.
Acquired Immunity to Animal Parasites. F. H. Reuling, Chicago.—p. 337.
*Specificity of Bacterial Proteolytic Enzymes and Their Formation. H. S. Diehl, Minneapolis.—p. 347.
Blackleg Toxin. T. P. Haslam and J. W. Lumb, Purity Biological Laboratories, Sioux City, Ia.—p. 362.
*Rat-Bite Fever Spirochete. S. Kusama, R. Kobayashi and K. Kasai, Tokyo.—p. 366.
*Exclusion of Air in Cultivation of Gonococcus. E. H. Ruediger, Bismarck, N. J.—p. 376.
*Germicidal Power of Antiseptic Oils and Substances Dissolved in Oil. P. D. McMaster, Philadelphia.—p. 378.
*Hemolytic Streptococci in Faucial Tonsil and their Significance as Secondary Invaders. I. Pilot and D. J. Davis, Chicago.—p. 386.
*Double Sugar Medium for Cultural Diagnosis of Intestinal and other Bacteria. A. I. Kendall and M. Ryan.—p. 400.

Bacteriologic Analysis of Milk.—One hundred and thirty-six milks, varying in bacterial content from 50 to 160,000,000 per cubic centimeter, have been analyzed by Simmons by five different methods: direct microscopic, standard plate, lactose plate, little plate (Frost), and reduction test. In milks containing less than 1,000,000 bacteria per cubic centimeter, the three methods—standard plate, lactose plate and little plate—gave closely comparable results. The lactose plates on the whole gave results slightly higher than the plain agar plates, and these results seemed to follow the trend of the little plate counts somewhat more closely than the standard plates. The direct microscopic count was less reliable with milks having a low bacterial content than it was with poor milks. In milks containing upward of 1,000,000 bacteria per cubic centimeter, the lactose plates were found to be considerably higher (50 per cent.) than the standard plates, the little plates tended to run somewhat lower, while the direct microscopic count gave highly satisfactory results. The time of the reduction test varied from one-half hour to thirty hours. Occasionally inexplicable variations occurred in the different classes of milks, but when these were smoothed out by applying a "moving average," a curve was obtained which closely approximates those obtained by the other methods.

Specificity and Formation of Proteolytic Enzymes.—The work done by Diehl suggests that differences in the chemical constituents of mediums may account for many of the unverified "new strains" of bacteria, the differentiation of which is based on some minor phase of their action on culture mediums. For instance, on a medium containing no organic nitrogen, no proteolytic enzymes are formed by bacteria. On gelatin, casein, broth, agar and peptone, enzymes are formed which will digest both gelatin and casein. Proteolytic enzymes are apparently formed to correspond to the different amino-acids present in the medium and will then attack these acids whether combined or free. These enzymes are not preformed in the bacterial cell but are dependent on the content of the medium on which it grows.

Rat-Bite Fever Spirochete.—In the infected wild rat, white rat and guinea-pig, the spirochete of rat-bite fever, in the early stages of the infection, was detected by Kusama and others principally in the blood; but after two weeks a large number appeared in the connective tissues, and as time went on this number was gradually increased. That is, this spirochete was always distributed numerously in the subcutaneous and submucous tissues of the eyelids, lips, bridge of the nose and tongue, and was especially abundant in the reticular connective tissue of the vascular sinus surround-

ing the follicle of the tactile hair of the upper eyelids and lips. It was also usually, if not always, found abundantly in the capsules of the salivary and lymph glands, in the heart wall, in the adventitia of the aorta and large arteries within the visceral organs, and sometimes in the endocardium of the heart. It could also be detected in the spleen, the liver, the suprarenal glands, the kidneys, the parenchyma of the salivary and lymph glands, etc. The spirochete was neither excreted through the saliva from the salivary gland nor mixed into the saliva through the normal mucous membrane of the mouth cavity from its submucous source. The excretion of the organism in the urine was comparatively rare. It is transmitted to a healthy animal through a wound caused by the bite of an infected animal, and the authors believe that in order to be transmitted it passes from the submucous source or from the circulating blood through an abrasion in the mouth, such as frequently occurs in the wild rat at the time of the bite. By keeping the infected and healthy animals in the same cage, they found no positive case among eleven guinea-pigs, and only two positive cases among twenty-nine mice. By feeding experiments they could find only two positive cases among fourteen guinea-pigs, and four among twenty-nine mice, so that it is natural to suppose that the infection in the positive cases resulted from an injured surface in the alimentary canal rather than by transmission through the normal mucous membrane. By instillation of the infected blood into the eye, they proved only one positive case among nineteen mice, and four among fourteen guinea-pigs. Thus, it seems hardly possible that this organism enters the animal body through the normal conjunctiva, at least, in the case of the mouse. The monkey inoculated with human or wild rat strain shows the pyrexia of relapsing type, but if the field vole strain is used, there is no fever.

The immune serum of the Japonese monkey treated with the human or wild rat strain exerts a spirocheticidal action on all three strains, while the field vole serum has only a slight action on the field vole strain, but none on the other two. The Japanese monkey, recovered from the infection, even if it be caused by the field vole strain, does not show any further symptoms after being reinoculated with human strain. The spirochete under discussion does not undergo any considerable variation in virulence and immunizing power, in passing through the body of the human being, monkey, guinea-pig, wild rat, white rate, mouse, etc., but in passing through the body of the field vole it seems to decrease its toxophore and haptophore groups quantitatively.

Exclusion of Air in Cultivation of Gonococcus.—Cultures of gram-negative diplococci have been obtained by Ruediger from gonorrheal material on medium composed of veal broth, made neutral to phenolphthalein, agar, salt, peptone and 10 per cent. human blood which had been heated to 56 C. for thirty minutes. Little or no growth was obtained on medium containing unheated human blood. On medium without salt, the diplococci grew about as well as on the medium with salt. The addition of glycerol or glucose seemed to be unfavorable as was also the omission of peptone. The culture tubes had to be stoppered air-tight. The growth obtained was nearly as luxuriant as that of *B. typhosus* on ordinary nutrient agar, and so far has been uniformly successful.

Germicidal Power of Oils and Oil-Dissolved Substances.—The typhoid bacillus was used by McMaster in his work. About twenty tubes of each type were planted on nutrient agar, and after from twenty-four to forty-eight hours' growth the tubes were filled with liquid petrolatum containing various percentages of phenol. Of the forty-eight-hour cultures, none were killed by 0.2 per cent., but all were killed by 0.6 per cent. phenol. In about half of the tubes 0.4 per cent. killed. The most resistant cultures were those in which the surface had been intentionally wounded, the growth being therefore rather deep and presumably protected from the action of the disinfectant. The minimal killing concentration of paracresol was from 0.2 to 0.3 per cent. and of guaiacol from 0.8 to 1 per cent. The particular brand of oil used did not change the results in any way. The action of phenol in all oils is the same. Experiments with menthol, camphor and turpentine resin showed that these did not kill in the highest concentrations that could be obtained. A series of tests were also made of dichloramin-T, eucalyptol, chlorinated liquid petrolatum and chlorinated eucalyptol. McMaster believes that his method may provisionally be regarded as satisfactory for determining quantitatively the germicidal power of antiseptic oils and substances dissolved in oil.

Hemolytic Streptococci in Tonsils as Secondary Invaders.—Hemolytic streptococci were recovered by Pilot and Davis by swab cultures in sparse numbers from the pharynx and tonsillar surfaces in 61 per cent. of 100 throats, chiefly children with hyperplastic tonsils; and from the crypts of the excised tonsils of the same individuals in 97 per cent., usually in predominating numbers. Swab cultures are, therefore, unreliable in determining the incidence of this organism in the respiratory tract. The frequency of hemolytic streptococci is decidedly less in the throats of persons whose tonsils have been extirpated than in the throats of persons with normal tonsils. The authors suggest that hemolytic streptococci from the crypts of tonsils are probably the most important source of the streptococcus complications of the various acute infectious diseases, and of the terminal infections.

Double Sugar Medium.—The double sugar medium used by Kendall and Ryan contains saccharose, 1 per cent., and mannitol, 0.1 per cent. It distinguishes between the various saccharose acid and gas, and the mannitol acid and gas producers, thus materially increasing the definiteness of cultural diagnosis and reducing somewhat the necessity for final agglutination with specific or polyvalent serum.

Journal of General Physiology, Baltimore

March 20, 1919, **1.** No. 4

Influence of Electrolytes on Viscosity of Dough. L. J. Henderson, W. O. Fenn, and E. J. Cohn, Cambridge, Mass.—p. 387.
Comparative Studies on Respiration. VI. Increased Production of Carbon Dioxid Accompanied by Decrease of Acidity. M. Irwin, Cambridge.—p. 399.
Decrease of Permeability and Antagonistic Effects Caused by Bile Salts. W. J. V. Osterhout, Cambridge.—p. 405.
Comparison of Permeability in Plant and Animal Cells. W. J. V. Osterhout, Cambridge.—p. 409.
Relation Between Oxygen Concentration and Rate of Reduction of Methylene Blue by Milk. E. N. Harvey, Princeton.—p. 415.
Influence of Temperature and Hydrogen Ion Concentration on Spore Cycle of Bacillus Subtilis. A. Itano and J. Neill, Amherst, Mass. —p. 421.
Bioelements; Chemical Elements of Living Matter. I. W. D. Hackh, San Francisco.—p. 429.
Photocreations of Partially Blinded Whip-Tail Scorpions. B. M. Patten, Cleveland.—p. 435.
Action of Acid and Alkali on Gluten. I. J. Henderson, E. J. Cohn, P. H. Cathcart, J. D. Wachmann, and W. O. Fenn, Cambridge. —p. 459.
Relation Between Thyroid Gland, Metamorphosis, and Growth. E. Uhlenhuth, New York City.—p. 473.
Amphoteric Colloids: IV. Influence of Valency of Cations on Physical Properties of Gelatin. J. Loeb, New York City.—p. 483.

Maine Medical Association Journal, Portland

March, 1919, **9.** No. 8

Eyes in War. J. A. Spalding, Portland, Me.—p. 197.
War Surgery Applied to Problems of Civil Practice. C. M. Robinson, Portland, Me.—p. 210.

Maryland Medical and Chirurgical Faculty Bulletin, Baltimore

February, 1919, **11.** No. 5

What Should be Real Significance of Entrance of State Dental Association into Membership? B. M. Hopkinson, Baltimore.—p. 123.

Medical Record, New York

March 29, 1919, **95.** No. 13

Roentgen Ray Visualization of Intestine by Means of New Intestinal Delineator. M. Einhorn, New York City.—p. 509.
Roentgengraphic Types of Influenzal Pneumonias. E. Fox, New York City.—p. 513.
*Prepuce as Grafting Material. I. C. Eisenberg, New York City.—p. 514.
*Prevention of Influenza. Public Health Committee of New York Academy of Medicine.—p. 516.
Dietary Deficiency and Disease. J. Aukle, Philadelphia.—p. 518.
Bacillus or Disease; Which Should be Treated in Influenza? B. Robinson, New York City.—p. 519.
Singers' and Speakers' Sore Throat. J. J. Levbarg, New York City. —p. 520.

Prepuce as Grafting Material.—A case is cited by Eisenberg in which the patient, a boy, 16 years of age, lost the last phalanx, part of the periosteum of the second phalanx, and the skin down to the lower third of the first phalanx of one of his fingers. A plastic operation was done, using the prepuce for grafts. On the thirty-eighth day after the accident, Eisenberg performed circumcision; then, after having the prepuce emptied of blood, he made a few buttonholes to allow free escape of serum and underlying air, pressed the graft firmly in place, all in one piece (like a finger stall), in order to remove the blood, bulbs of air, and as much moisture as possible. It was then dressed with neutral solution of chlorinated soda, a cotton wool bandage being applied firmly to insure close adaptation of the graft to the granular surface of the finger. In sixty days, cicatrization was complete.

Prevention of Influenza.—This report details the measures in use during the recent epidemic. Nothing new is added.

New Orleans Medical and Surgical Journal

April, 1919, **71**, No. 10

Laboratory as Aid in Diagnosis of Pneumococcal Complications of Influenza. F. M. Johns, New Orleans.—p. 421.
Is Argyrol Useless? H. D. Burns, New Orleans.—p. 426.
Practical Congenital Syphilis. C. J. Bloom, New Orleans.—p. 436.
*New Technic for Suspension of Kidney. R. M. Penick, Shreveport, La.—p. 444.

New Technic for Suspension of Kidney.—Penick uses the Kelly incision, approaching the kidney through the superior lumbar trigonum, only he makes the incision a little larger, if necessary. When the deep lumbar fascia is reached it is opened with a clean cut, and beginning at the lower angle of the wound a ribbon of fascia is dissected about two-thirds inch wide. The end is secured with a hemostat and laid aside for the present, and the operator proceeds to deliver the kidney up into the wound as usual. The perirenal fat is stripped to the hilum and the capsule incised and dissected, the sutures introduced, two on each side. These sutures are caught in hemostats and laid aside while the perirenal fat is gathered by a circumferential large suture, forming a cup-shaped support under the kidney, and the ends are left long for later attachment at the lower angle of the wound in the musculature. The ribbon of fascia is now picked up and a large chromic gut suture threaded into the end to prolong it; it is then fitted around the lower pole of the kidney, just below the hilum, and a stitch securing it to the capsule of the kidney near the front is introduced to prevent slipping. The ends of the suture, prolonging the ribbon of the fascia, are left in the hemostat while the kidney is being replaced, and the sutures of the capsule are secured in the adjacent musculature, as usual in this procedure. When this stage is reached the kidney is placed in the position desired and the suture prolonging the ribbon of fascia threaded on a carrier or large needle and fixed in the muscles of the back, at the most convenient point, fitting snugly around the kidney and holding it securely while the denuded surface on the kidney forms adhesions. The large sutures in the subphrenic fat securing a support under the kidney are now drawn sufficiently taut, forming a cup-shaped support. This last procedure closes the loose space under the kidney. The wound is then closed in the usual way, layer by layer.

New York Medical Journal, New York

March 29, 1919, **109**, No. 13

Etiology and Treatment of Colds. O. T. Osborne, New Haven, Conn.—p. 529.
Venereal Disease Problem. L. L. Harris, New York City.—p. 531.
*Artificial Pneumothorax in Pulmonary Tuberculosis (to be continued). L. S. Peters, Albuquerque.—p. 535.
Resistance to Disease. C. L. Redfield, Chicago.—p. 542.
*Comparison of Bacteriology of Pneumonia, Antemortem and Postmortem. E. C. Birge, and L. C. Havens, Camp Wadsworth, S. C.—p. 544.
Influenza Epidemic at Camp Greenleaf. J. L. Swarts, Camp Greenleaf, Ga.—p. 546.
Diabetes Mellitus. T. W. Edgar, New York City.—p. 548.
Differential Diagnosis of Cutaneous Lesions at Bordeaux School. C. G. Cumston, Geneva, Switzerland.—p. 550.
Prophylaxis and Treatment of Influenza. L. T. de M. Sajous, Philadelphia.—p. 553. (To be continued).

Pneumothorax in Tuberculosis.—For the past six years, Peters has been treating suitable cases of tuberculosis by means of compression and with good results. He has seen apparently hopeless cases cured, and has seen the last days of the dying consumptive made easier by a relief of distressing symptoms. Peters gives facts based on a large experience, and a careful study of the literature, with the hope that more physicians will be induced to use a real means of aiding the tuberculous patients. The next paper will give details of the observations made by Peters.

Bacteriology of Pneumonia.—One hundred and twenty-four cases that came to necropsy and from which cultures were obtained are analyzed, as to their bacterial findings, by Birge and Havens. Of these, sixty cases were typed antemortem. In a strikingly large number of cases, *Streptococcus hemolyticus* was the predominating organism, and relatively a large number of cases in which it was the predominating organism antemortem. The relatively large number of Type III pneumococci recovered at necropsy coupled with the relatively small number found antemortem is accounted for by the fact that a large number of specimens of sputum were poor when submitted for examination. The numbers of Type III pneumonias, confirmed by necropsy, was practically the same as the numbers of Type IV. A search was made for healthy carriers of Type III pneumococci in an attempt to explain the cases found. Among the 600 men examined, 2 per cent. were found to harbor this type. These men gave no history of their association with pneumonia, and were possibly the source of the cases entering the hospital. The cases which showed *Streptococcus hemolyticus* both antemortem and postmortem occurred early in the epidemic, when there were a large number of healthy carriers of this organism in the camp and most of the admissions to the hospital showed a pedominance of this organism in the throat cultures. It is considered, in these cases at least, as being the cause of the infection and death. *Bacillus influenzae* was isolated from only one case during the epidemic in which this organism might possibly be considered as the etiologic factor. *Bacillus influenzae* was isolated both from the sputum and at necropsy in eleven other cases, but only in connection with other organisms which were more virulent and which could account for the pathologic changes found at necropsy. Of the twenty-eight cases of Type IV pneumococcus found in the sputum antemortem only nine were confirmed by the necropsy findings.

Philippine Journal of Science, Manila

November, 1918, **13**, Sec. B, No. 6

*Endemic Malaria in Philippine Islands as Military Problem. F. G. Haughwout, Manila.—p. 287.
Study of Calcium Glands in Common Philippine House Lizard. E. S. Ruth, Manila.—p. 311.
Study of One Hundred Thirty-Five Human Embryos and Fetuses Collected in Philippine Islands. E. S. Ruth, Manila.—p. 319.

Endemic Malaria as Military Problem.—Haughwout calls attention to the fact that the recruiting of large bodies of men destined to form army units, from areas in tropical countries where malaria is known to be endemic, is certain to bring together many men, who, apparently healthy, are yet carriers of the malarial parasite and are capable of conveying it to healthy persons. These carriers, in the presence of anopheline mosquitoes, are a source of peril to any community that is comparatively free from the malarial fevers. They are likewise a peril in their own garrison, and great care should be exercised in the selection of a site on which to establish a training camp. Such men, on undergoing the heavy work of military training, with its attendant fatigue and exposure, are extremely likely to develop the disease in its active form with the consequence that the effective strength of their unit will be reduced.

Public Health Journal, Toronto

March, 1919, **10**, No. 3

Democracy and Public Health Administration. C. J. Hastings, Toronto.—p. 97.
Medical Profession as Public Service for Health. P. H. Bryce, Ottawa.—p. 113.

Texas State Journal of Medicine, Fort Worth

March, 1919, **14**, No. 11

Case Resembling Pulmonary Tuberculosis—Long Retention of Foreign Body in Bronchus. I. S. Kahn, San Antonio.—p. 350.
Case of Concealed Hemorrhage of Scalp. B. G. Prestridge, Alvardo, Tex.—p. 351.
Arthroplasty of Thumb and Finger Joints. G. Hamilton, Houston. —p. 353.
Surgical Abdomen. F. U. Painter, Corpus Christi.—p. 354.
Rural School Sanitation. L. G. Lenert, Texas State Board of Health. —p. 356.

War Medicine, Paris

November, 1918, **2**, No. 4

*Streptococcus Infections of Lungs in British Army. J. A. Wilson, B. A. F.—p. 556.
*Susceptibility of Convalescents from Measles to Streptococcus Infections. R. L. Levy, M. C.—p. 560.
Relation of Streptococcus Hemolyticus to Pneumonia in Troops in United States. W. Longcope, M. C.—p. 566.
Limitations and Control of Streptococcus and other Respiratory Infections. J. A. Capps, M. C.—p. 571.
Treatment of 420 Infected Wounds under Battle Conditions. Surgical Staff of Lakeside Unit.—p. 587.

December, 1918, **2**, No. 5

Trench Foot. J. Cottet.—p. 707.
"Trench Feet" Prevention. R. S. H. Fuhr.—p. 712.
Trench Foot Treatment. G. K. Ashford.—p. 717.
Renovation of Sick and Wounded and Restoration to Forward Area by Methods Usually Followed in Convalescent Depots. Dalrymple. —p. 746.
Recuperation of Wounded and Sick to Front from Psychologic Viewpoint. Laignel-Lavastine.—p. 750.
Functions of a Convalescent Camp. Neff.—p. 757.
Effort Syndrome. A. E. Cohn.—p. 761.
Restoration of Sick and Wounded to Line. Frank Billings.—p. 766.
Traumatic Shock and Hemorrhage.—p. 810.
Suture of War Wounds. R. Lemaitre.—p. 790.

Streptococcus Infections of Lungs.—During the investigation of a severe epidemic of diarrheal diseases, a group of cases was encountered by Wilson which presented relatively unusual features: first, in that the degree of anemia was quite out of proportion to the amount of blood present in the first few days in the feces, and second, in that the patient frequently developed the physical signs of pneumonia, a pneumonia which ran a prolonged course, was accompanied by citron-colored sputum, and terminated by lysis. The examination of the feces microscopically and culturally brought out the fact that in all the cases there were very large numbers of streptococci, and that in those cases passing almost pure blood they were present in a great state of purity. The sputum of twenty-three cases of secondary pneumonia was examined. The microscopic appearances were uniform. In the early stages the cellular elements were few, but by the third day of the pneumonic symptoms there was a large increase consisting mainly of polymorphonuclear and endothelial cells. The organisms were mainly of the streptococcal type; sometimes they were present in practically pure culture. Blood cultures also were made in twenty out of the twenty-three cases; streptococci were obtained from the blood culture. It could, as a rule, be recovered up till the sixth day of the illness. All the patients gave a history of having drunk shell-hole water, the diarrheal symptoms ensuing from one to five hours later. In an inquiry into the bacteriologic flora of such waters it was found that in twenty-eight out of forty-two specimens examined, streptococci were present in large numbers.

Susceptibility of Convalescents from Measles.—Of the 388 cases of measles analyzed by Levy, 119 had complications, a number of patients suffering from more than one. The complications of measles occurred almost exclusively among streptococcus carriers, the incidence in this group being 36.8 per cent. as contrasted with 6.4 per cent. in "clean" cases. Furthermore, the four complications noted among the non-carriers were of distinctly minor nature—two instances of acute bronchitis, one acute tonsillitis, and one cervical adenitis. Bronchopneumonia occurred forty-seven times, or in 12.1 per cent. of all cases. Fifteen, or 34 per cent., of the bronchopneumonias developed empyema. On culture, thirteen pleural fluids showed *S. hemolyticus*, one pneumococcus. From eleven specimens of pus obtained from cases of acute otitis media, *S. hemolyticus* was grown 9 times; *Staphylococcus aureus* twice. Of 326 carriers, either entering the hospital as such, or becoming infected after admission, 211, or 63.2 per cent., had no complications.

Wisconsin Medical Journal, Milwaukee

March, 1919, **7**, No. 10

Hospital Standardization. J. M. Dodd, Ashland.—p. 391.
Modern Treatment of Rectal Diseases. J. Donovan, Milwaukee.—p. 402.
Early Symptoms of Organic Brain and Cord Disease. D. W. Roberts, Milwaukee.—p. 405.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Tropical Medicine and Parasitology, Liverpool

Feb. 28, 1919, **12**, Nos. 3 and 4

Mensurative Study of Cysts of Entameba Coli. J. R. Matthews. —p. 259.
Strongylidae in Horses. W. Yorke and J. W. S. Macfie.—p. 273.
Habits of Glossina Tabaniformis, Westw. J. Schwetz.—p. 279.
New West African Ceratopogoninae. H. F. Carter.—p. 289.
*Treatment of Malaria: XVII. Value of Continuous and Interrupted Quinin Administration in Simple Tertian Malaria. J. W. W. Stephens, W. Yorke, B. Blacklock, J. W. S. Macfie, C. F. Cooper and H. F. Carter.—p. 303.
Id. XIX. Intravenous Injections of Disodoluargol in Simple Tertian Malaria.—p. 339.
*Id. XX. Intramuscular Injections of Collosol Manganese in Simple Tertian Malaria.—p. 345.
*Id. XXI. Arsenic in Simple Tertian Malaria.—p. 371.
*Spread and Incidence of Intestinal Protozoal Infections in Population of Great Britain. J. R. Matthews and A. M. Smith.—pp. 349 and 361.

Quinin in Malaria.—The authors experimented with the administration of 30 and 90 grains of quinin per week, given in equal doses daily for six days and in two doses, one on each of two consecutive days. They found that, given a total weekly dose of quinin, it is better as a palliative to divide it into two equal parts and administer one on each of two consecutive days, than to divide it into six equal parts and administer one on each of six consecutive days; in other words, as a palliative, interrupted is preferable to continuous quinin treatment in simple tertian malaria.

Intramuscular Injections of Collosol Manganese in Malaria.—This preparation was tried in fifteen cases. The drug was injected intramuscularly, 1 c.c. on each of two consecutive days in fourteen cases and 1 c.c. on each of three consecutive days in one case. The drug was of no value.

Arsenic in Malaria.—The authors have found that the daily administration of arsenic, or of arsenic and strychnin, in small doses (15 minims) in combination with quinin (5 grains) is not more effective than the same dose of quinin alone. As a palliative, liquor arsenicalis (B. P.) 30 minims daily, appeared to exert a definite control of the temperature, the average weekly number of cases in which there were parasitic febrile relapses being only 3.8 per cent. of cases treated; on the contrary, however, it failed in many cases to keep the cutaneous blood free from parasites, the average weekly number of cases in which there were parasitic relapses (febrile and nonfebrile) being 28.1 per cent. of cases treated. As a curative, the treatment was practically valueless, being followed by 85 per cent. of relapses. The same treatment, however, with two initial injections of quinin dihydrochlorid, 15 grains, gave very different results. The average weekly number of cases in which there were parasitic febrile relapses was 2.7 per cent. of cases treated; but in contradistinction to the previous treatment, the average weekly number of cases in which there were parasitic relapses (febrile and nonfebrile) was only 3.9 per cent. of cases treated. Furthermore, as a curative, the result of this treatment presented a striking contrast to that of the previous one, only 12.5 per cent. of cases relapsing within the observation period of sixty days after treatment.

Intestinal Protozoal Infections in Population of Great Britain.—Among 450 civilians (men, women and children) examined by Matthews and Smith, seven, or 1.5 per cent., were found by one examination per case to be carriers of

Endameba histolytica. Among 1,098 healthy young recruits, one examination revealed sixty-two, or 5.6 per cent., to be infected with *E. histolytica*. The nonpathogenic intestinal protozoa (*E. coli, E. nana, Giardia* and *Chilomastix*) are commonly distributed in the population of Great Britain. Stools were examined by Matthews and Smith for intestinal protozoa from 548 children under 12 years of age. *E. histolytica* was found in 1.8 per cent., and the commonest protozoon was *G. intestinalis*, found in 14 per cent. Children become infected soon after they are 1 year old and from this age onward all the common intestinal protozoa are found, irrespective of age or sex. The results have been compared with those from a similar population of adults and it has been observed that *G. intestinalis* in particular is much more common among children. Investigations of whole families of which one member was known to be infected showed that in certain families infections were much more common than in the general population.

Archives of Radiology and Electrotherapy, London

February, 1919, **23**, No. 9

Method of Obtaining Static Electricity from Induction Coil, and New Methods for Application of Static and High-Frequency Currents. G. G. Blake.—p. 271.
Radioscopic Method for Estimating Hypertrophy of Left Ventricle. J. M. W. Morrison and L. White.—p. 282.
Protection in Diagnostic Work: Effects of Scattered and Secondary Rays. F. Hernaman-Johnson.—p. 290.

British Medical Journal, London

March 8, 1919, **2**, No. 3036

*Hyperglycemia and Glycosuria. H. J. Hamburger.—p. 267.
Influenza and Pneumonia. F. L. Armitage.—p. 272.
*Febrile Acidosis in Scarlet Fever in Children. R. E. Thomas.—p. 274.
National Medical Treatment. W. J. Howarth and B. A. Richmond.—p. 274.

Hyperglycemia and Glycosuria.—Primarily Hamburger's work was done to ascertain whether or not the kidney allowed free glucose to pass through. He found that the glomerular membrane has the power of retaining free glucose, and that this power is governed by the influence of the chemical composition of the perfusion liquid on the glomerular epithelium. If this is the usual Ringer's solution, composed of sodium chlorid, 0.6 per cent.; calcium chlorid, 0.0075 per cent.; potassium chlorid, 0.01 per cent., and sodium bicarbonate, 0.02 per cent., and to it has been added 0.1 per cent. glucose, then a urine containing 0.07 per cent. glucose is excreted, 0.03 per cent. thus being retained. In the perfusion liquid the quantities of potassium and calcium with respect to each other can be altered in such a way that the retentive power need not be influenced by it. In such a case they balance each other. Instead of using potassium, this balancing can also be effected by means of radium and uranium, with doses which are determined not by equivalence in a chemical sense, but by the degree of radioactivity. The subjection of the kidney to mesothorium rays can be substituted for potassium. If the concentration of sodium bicarbonate in the Ringer's solution is raised from 0.02 to 0.285 per cent., the quantity which is present in the frog's serum, then the kidney can retain from the sugar-holding perfusion liquid more than 0.03 per cent. The artificial "urine" becomes totally free from sugar.

The results lay bare a new form of permeability—one, namely, in which cells under physiologic conditions, although quite permeable to salts, are yet impermeable to glucose, which like these is also a crystalline. The structure or configuration of the glucose molecule is responsible. The isomeric fructose and the stereo-isomeric mannose and galactose, and even the levorotary glucose (*l*-glucose) pass through the glomerular membrane. Thus the living glomerular membrane is able to distinguish normal glucose from other sugars. When, besides glucose (dextrose), fructose (levulose) occurs in the perfusion liquid, only the levulose is let through. The two sugars are separated as by a filter. What is true for a mixture of levulose and dextrose applies also to a mixture of dextrose and lactose. The lactose passes completely into the urine, the glucose is retained by the glomerular epithelium as though there were no lactose present.

Regarding the relation between glycosuria and hyperglycemia, the experiments have made clear the following: If there is a hyperglycemia of a certain degree, then the glomerular epithelium sickens and allows the glucose to pass through. The higher the degree of hyperglycemia, the stronger the permeability becomes. The toleration of the glomerular membrane for the sugar concentrations lying above the normal appears to be different for different individuals.

Febrile Acidosis in Scarlet Fever.—Thomas examined daily the urine of seven consecutive cases of moderate attacks of scarlet fever, estimating the acidity, the proportion of urea and ammonia-amido nitrogen and testing for acetones and diacetic acid, with the following results: (1) acidosis lasting from three to twelve days, reaching its maximum on the third to fifth day of the disease; (2) acetone and diacetic acid not always, though generally present; (3) urine not alkaline during administration of sodium bicarbonate from 10 to 15 grains every four hours; (4) one return of acetone, increase in ammonia nitrogen from 1.7 to 6.3 per cent., and rise in acidity from 2 to 78 per cent. tenth-normal acid, after halving the dose of soda; (5) development of nephritis later in the two patients who showed the most severe acidosis. As sodium bicarbonate did good in moderate and severe cases, Thomas has made it a routine for all with satisfactory results. It is given for a week to ten days to all children who have scarlet fever, the dose being regulated by the reaction of the urine.

Edinburgh Medical Journal

March, 1919, **22**, No. 3

Position of Physiology in Medicine. E. S. Schafer.—p. 144.
Malaria in Macedonia. A. Goodall.—p. 156.
Three Cases of Quinin Amblyopia. H. M. Traquair.—p. 169.
Training Student of Medicine: Teaching Dermatology. N. Walker.—p. 173.
Id. F. Gardiner.—p. 177.
Id. R. C. Low.—p. 178.
Suggestions for Utilization of Poor Law Hospital for Teaching Medical Students. T. Y. Finlay.—p. 181.

Indian Medical Gazette, Calcutta

February, 1919, **54**, No. 2

Charaka Samhita. W. D. Sutherland.—p. 41.
*New Technic of Heart Massage with Case of Resuscitation. T. C. Bost.—p. 50.
*Heart Massage in Chloroform Poisoning. D. J. Harries.—p. 53.
War Injuries of Peripheral Nerves. T. W. Foulkes.—p. 54.
Cellulose and Chronic Constipation. R. F. E. Austin.—p. 56.
Ether as Anesthetic. J. B. H. Holroyd.—p. 60.

Heart Massage for Resuscitation.—Bost makes an abdominal incision 4 inches long in the median line, extending from above the umbilicus well up into the xiphosternal notch. The left costal cartilages are well retracted, bringing the anterior diaphragmatic insertion will into view. A 2-inch incision, beginning 1 inch to the left of the median line carried outward behind the costal margin, cuts the fibers of the diaphragm near their insertion. A blunt instrument pushed in opens the pleural cavity, and the opening is rapidly dilated with two or three fingers of the right hand, so that the whole hand can then be passed into the thoracic cavity anterior to the pericardium. The hand is passed upward, the thumb behind the sternum and the fingers embracing the entire organ in the pericardium. The thumb compresses the right auricle and ventricle, and the base of the heart is effectively massaged. No vessels are injured in this incision, as the superior epigastric artery is internal to the incision and passes into the rectus muscle, and the musculophrenic branch enters the diaphragm through the cellular tissue behind the eighth or ninth costal cartilages and passes backward, deeper than the incision. The liver and stomach, even if prominent, offer no obstruction to this route, nor is the pericardium in danger of being opened. During the massage the parts can be pressed round the wrist of the operator so that air is not sucked in, and there is no tendency to collapse of the lung.

Heart Massage in Chloroform Poisoning.—The patient collapsed before the operation—a laparotomy—was begun. The anesthesia was complete. The heart had ceased beating. A 3-inch median incision was made above the umbilicus.

Then, with the left hand over the cardiac area externally, and the right on the under surface of the cardiac portion of the diaphragm, Harriès submitted the heart to a series of rapid squeezes between the two hands at the rate of about fifty to sixty a minute. After the tenth compression the heart started beating. It went on for thirty beats at the rate of 90 to 100 a minute and then stopped. The squeezing was repeated, and after the fourth compression the heart again started beating—at first very irregularly, and stopping at intervals for two to three seconds. After about ten minutes of this irregularity, the heart beats and pulse started alternating, and the alternation continued until the onset of the final collapse preceding the patient's death sixteen hours later. During these procedures, Harries was impressed by the fact that the heart could not be felt through the diaphragm when it was not beating; but as soon as it commenced to beat, the cardiac impulse was much more distinctly felt than the apex beat on the chest wall. The color of the mucous membrane of the lips was restored after three to four beats of the heart, whereas the color of the peritoneum returned only after a dozen beats.

Journal of Laryngology, Rhinology, and Otology, London

March, 1919, **34**, No. 3

Mastoidectomy for Acute Suppurative Inflammation; Use of B. I. P. P. H. Tilley.—p. 73.
Two Cases with Cerebellar Symptoms. A. Campbell.—p. 76.
Tuberculomas of Nose: Two Cases. J. Harper.—p. 81.
Three Cases of Accessory Nasal Sinus Suppuration. W. M. Mollison. —p. 82.

Journal of State Medicine, London

December, 1918, **26**, No. 12

Housing Reform. A. M. Williamson.—p. 353.

Journal of Tropical Medicine and Hygiene, London

March 1, 1919, **22**, No. 5

*Treatment of Leprosy. A. Connal.—p. 37.

Treatment of Leprosy.—In the treatment of leprosy at the Yaba Leper Asylum, Lagos, Nigeria, chaulmoogra oil has been in constant use; nastin has been employed for four years; Heiser's combination of chaulmoogra oil with camphorated oil and resorcin is given in certain cases, and sodium gynocardate was tried, the latter half of 1917. Connal says that it is difficult to reach a true estimate of the value of any one drug in the treatment of leprosy. A perusal of the case books leaves the impression that none of the four named methods of treatment is specific. Relapses have occurred in treated and untreated cases. Definite improvement has been noted in the entire absence of drug administration. The negro leper is prone to alternating optimism and pessimism. He eagerly welcomes a new therapeutic measure and tends to exaggerate any beneficial results, but despondency sets in sooner or later, when he may refuse further dosage. A history of twenty patients is given to demonstrate the results of the various forms of treatment.

Medical Journal of Australia, Sydney

Feb. 8, 1919, **1**, No. 6

Health of the State. J. Morton.—p. 109.
Case of Lacerated Vagina During Coitus. E. H. Stokes.—p. 111.

Feb. 22, 1919, **1**, No. 8

Influenza Epidemic in Dunedin, New Zealand.—F. Fitchett and J. T. Bowie.—p. 146.
New Operation for Procidentia Uteri in Old. A. N. McArthur.— —p. 149.
Dermatitis Medicamentosa Due to Antipyrin with Persistent Pigmentation. N. Paul.—p. 151.

March 1, 1919, **1**, No. 9

Treatment of Hyperthyroidism by Roentgen Rays. H. Harris.—p. 167.
Improved Operation for Large Hydatid Cyst of Lung. C. E. Corlette. —p. 168.
National Medical Service. J. Corbin.—p. 170.
Two Cases of Lacerated Vagina During Coitus. C. E. D'Arcy.— p. 172.
Mental Factor in Neuroses of War. R. G. Gordon.—p. 81.
Amnesia and Stupor. A. F. Hurst.—p. 87.
Diagnosis of Hysterical Ptosis. A. F. Hurst.—p. 102.
Abdominal Reflex in Hysteria. A. F. Hurst.—p. 103.
Occurrence of Babinski's "Fan Sign" in Hysterical Paraplegia. J. F. Venables.—p. 105.
Nature of Hysteria and Hysterical Symptoms. A. F. Hurst.—p. 106.
New Method of Reinforcing Knee-Jerk. A. F. Hurst.—p. 111.

Medical Journal of South Africa, Johannesburg

November, 1918, **14**, No. 4

Bacteriology of Epidemic Influenza on Witwatersrand. F. S. Lister. —p. 290.
Seborrhea; Seborrheic Eczema. L. E. Ellis.—p. 293.
Two Cases of Anthrax Treated with Arsphenamin. A. Piiper.—p. 298.
Living Filaria Removed from Eyelid. A. T. Thurston.—p. 299.

December, 1918, **14**, No. 5

Epidemic Influenza of Pulmonary Type. H. A. Loeser.—p. 322.
Pediatric Notes on Influenza Epidemic. C. L. Leipoldt.—p. 327.
Examination of Cerebrospinal Fluid. W. M. Montgomery.—p. 331.

Seale Hayne Neurological Studies, London

September, 1918, **1**, No. 2

Tremors in Soldiers. A. F. Hurst.—p. 53.
Responsibility of Medical Officers in Development of Hysterical Symptoms in Soldiers. J. L. M. Symns.—p. 56.
Bent Back of Soldiers. A. F. Hurst.—p. 60.
War Neuroses Seen During a Week's Experience at Seale Hayne Military Hospital. S. H. Wilkinson.—p. 67.
*Hysterical Hiccup. A. F. Hurst.—p. 71.
*Hysterical Left Facial Paralysis, Right Facial Spasm, Left Ptosis, Strabismus, Aphonia, Dysarthria, Paralysis of Tongue, Paralysis of Right Arm and Both Legs and Amblyopia Following Gassing.

Hysterical Hiccup.—The case cited by Hurst was of thirteen months' duration. It was associated with hysterical monoplegia and talipes of twenty months' duration, and was cured by suggestion during intoxication with bromid.

Hysterical Left Facial Paralysis, etc.—All of the symptoms in this case were rapidly cured by persuasion and reeducation. Hurst mentions the fact that this case is of special interest as two of the hysterical symptoms showed signs which are generally supposed to indicate organic disease, the facial paralysis involving the platysma muscle and the left-sided ptosis being accompanied by overaction of the frontalis. Any doubt which their presence may have raised in the diagnosis at once disappeared when rapid recovery occurred by pure psychotherapy.

Bulletins de la Société Médicale des Hôpitaux, Paris

Dec. 13, 1918, **42**, No. 35

*Induced Convergence of Eyeballs. H. P. Descomps, P. Merle and P. Quercy.—p. 1155.
*Tuberculous Endocarditis. H. Barbier.—p. 1159.
*Meningeal Hemorrhages in Typhoid. Sergent and Bertrand.—p. 1162.
Vaccine Therapy of Influenza. H. Philippon.—p. 1163.
*Parotitis in Soldiers. G. Railliet.—p. 1165; Id.—p. 1168.
Colloidal Silver by the Mouth. A. Challamel.—p. 1171.
*Peptic Ulcer after Gastro-Enterostomy. Carnot, Froussard and de Martel.—p. 1173.

Induced Convergence of Eyeball After Aerial Shock.—The uncontrollable adduction of one or both eyeballs during rotation tests is frequently associated with relics of paresis of the sixth pair. It may also be observed with injury of the eighth pair. Four cases are described with evident lesions in the vestibular or cochlear domain. The convergence of the eyeballs can thus be regarded as an indirect sign of a lesion in the apparatus of hearing, as also of injury of the oculomotor centers or of the centrifugal branch of the reflex arc affecting the motor nerves of the eye. It is a phenomenon that interests not only the neurologist but also eye and ear specialists.

Tuberculous Endocarditis.—In Barbier's case, the girl of 13 had presented severe asystole. The first signs of trouble had been noted five or six months before the fatal termination. There was no history of rheumatism, but necropsy revealed a fibrous process in the endocardium that had entailed mitral insufficiency. Other valves were also involved. The assumed tuberculous nature of the disease was confirmed only by discovery of a tubercle in the liver. Asystole develops early with tuberculous endocarditis, and death generally occurs within the year. This is the second case he had encountered within a year.

Meningeal Hemorrhage in Typhoid.—Sergent and Bertrand report a case of typhoid in a woman of 35 in which intense headache from the first was explained by the hemorrhagic character of the cerebrospinal fluid on lumbar puncture the fourteenth day, and again the nineteenth day. The fluid seemed otherwise normal and smooth recovery followed. They have not found any cases resembling this on record. Meningitis is comparatively common in typhoid, but simple hemorrhage seems to be exceptional.

Parotitis in Soldiers.—Railliet quotes certain physicians, in charge of wards to which men with mumps are sent, to the effect that many of the mumps suspects do not have mumps in fact, but acquire it in the mumps ward. The differential diagnosis is sometimes extremely difficult, as chronic or acute enlargement of the parotid glands is common, and is liable to be mistaken for mumps. Some of the men in this group say that the other members of their family have the same "large cheeks." Among the forty-three men with habitually large parotid glands, three had actually enormous enlargements; fifteen were farm workers and in about 16 per cent. there was a suspicion of lead poisoning.

During an epidemic of mumps the troops were gassed repeatedly with mustard gas, and this in 4 or 5 per cent. of the cases caused the parotid glands to become enlarged and tender. The physicians were unable to distinguish between the mumps cases and the "yperitic parotitis" except by the absence of contagion from the latter and the absence of orchitis, along with the other lesions from the mustard gas. The yperitic parotitis passed off harmlessly in about eight days.

Peptic Ulcer After Gastro-Enterostomy.—Carnot and his co-workers operated in a case of fecaloid vomiting in a man who had had a gastro-enterostomy done two years before. The laparotomy revealed a peptic ulcer with a fistula between the jejunum and the colon, close to the gastro-enterostomy opening. The ulcer had bored a communication between the small and the large intestine, and the whole mass of the adherent stomach and small and large intestine was resected in one block. The findings in this case, as they explain, confirm the peptic nature of ulcer in stomach, jejunum or duodenum, from lack of the physiologic immediate saturation of the gastric juice. In every case of fecaloid vomiting an abnormal communication between the stomach and the colon should be suspected; diarrhea favors the fecaloid vomiting. This case teaches anew the importance of keeping medical oversight of gastro-enterostomy patients as the abnormal passage of gastric juice directly into the jejunum is liable to set up ulceration at any time.

Journal de Médecine de Bordeaux

Feb. 28, 1919, **90**, No. 4

*Infant Morbidity at Bordeaux. A. Moussous.—p. 67.
*Physiotherapy of Sciatica. A. Fraikin.—p. 70.

Infant Morbidity During the War.—In resuming his course in pediatrics after the interruption of the war, Moussous comments on the effects of war deprivations on infants and those to be born soon. Among other points he emphasizes is that chilling of a new-born infant damages the fragile red corpuscles, and the laking of the blood may become manifest in the form of jaundice. Other injuries from cold explain the high mortality among young infants this last year owing to the lack of adequate heating of the homes, especially of the working classes. A good supply of milk has been available for infants at Paris all through the war, as the authorities in preparing for a siege provided an ample dairy herd. At Bordeaux the death rate among infants has been so high that for the last few months the authorities have admitted the mothers to the hospitals when nurslings have to be taken there.

Physiotherapy of Sciatica.—Fraikin reports the application of electricity, superheated air and massage, mechanotherapy and retraining of the limb in seventy-six cases of sciatic neuralgia. Three are still under treatment; forty-four were cured and eleven very much improved, while all were improved to some extent. He urges application of physiotherapy from the start instead of wasting time on drugs alone. This would prevent the sciatica from becoming so firmly established and tenacious, and would ward off neuritis and atrophy.

Correspondenz-Blatt für Schweizer Aerzte, Basel

Feb. 15, 1919, **49**, No. 7

*Influenza. II. H. Sahli.—p. 193.

Influenza.—Sahli describes the experiences with prophylactic measures at Berne. There are so many objections to masks that he does not regard them as feasible. One reason is that the conjunctiva may be a portal of entry for the germs, and another reason is that the air being forced in and out makes strong currents which sweep the bacteria along. None of the commercial masks tested were found impervious to microbes. It would be more effectual to have the influenza patient wear the mask, to protect others against him, but he would suffer more from it than others, as his respiration is already hampered by the disease. Sahli remarks, however, that the physician can protect himself against the coughing patient by having the attendant cover the patient's face with a towel or the drawn up flap of the shirt while he is examining the chest. Actual tests have shown that this precaution protects against droplet infection as effectually as the usual mask. In examining the throat, protecting goggles are worn as for diphtheria patients, and the mouth and nose are protected by the hand. All these measures have an educative influence on the patient, without frightening him as would a masked physician. By the force of example, the importance of care to prevent infection in expectoration and coughing is impressed on him. Sahli's assumption of a complex virus has already been mentioned in these columns, March 1, 1919, p. 687.

He declares that all the testimony speaks in favor of the production of immunity by an attack of influenza, especially the frequent drop of the temperature and the accompanying arrest of the lung or bronchial process. This indicates the sudden production of combative forces which annul the toxins. The fact that immunization is not absolute in every one has its counterpart in other infectious diseases. The flaring up of the influenza again when it had apparently just subsided is a further convincing proof of the influence of the immunization, as it demonstrates that the active virus was still present in the body before the relapse, but that it had been kept under control by antibodies for a time, but had finally escaped from under this control. The whole epidemiology of influenza speaks for at least partial immunization by the pandemics and the growing up of a new and susceptible generation. Between the pandemics, the influenza bacillus lives as a saprophyte, waiting for its hour to strike again. It perishes rapidly in the external world, as also apparently the pneumococcus and the streptococcus which form with it the complex virus. Age in itself, in addition, may protect against influenza; the elderly and infants seem to escape. Sahli adds that the cases of catarrhal fever, etc., falsely labeled "grippe," have contributed to prevent the due realization of the actual immunity conferred by influenza. It is possible that those who escape influenza during a pandemic have been imperceptibly "vaccinated" during the epidemic by inhalation of minute doses of the virus, and thus have become relatively immunized by this "inhalation vaccine."

Policlinico, Rome

Feb. 9, 1919, **26**, No. 6

*Nervous Manifestations of Influenza. G. Dragotti.—p. 161.
*Treatment of Influenza. C. Bassoni.—p. 167.
*Quinin in Prevention of Influenza. G. Betti.—p. 169.
A. Benedictus, Venice, ? -1512. G. Bilancioni.—p. 173.
*Latent Cysticercosis. P. De Tommasi.—p. 174.

Nervous Manifestations of Influenza.—Dragotti reviews the multiform organic and functional central and peripheral nervous manifestations of influenza, a long list, to which he adds epilepsy, chorea, hysteria and neurasthenia as sequelae that have been observed. Cases are known also in which exophthalmic goiter, myxedema or delirium tremens have followed on influenza. The influenzal psychoses of the acute period are generally of the amentia type, and as a rule subside in two or three weeks. The psychosis, however, may pass into

a state of mental collapse, with stupor which may persist and become actual dementia. In other cases a neurasthenic condition, with depression and restlessness, sets up a vicious circle as the appetite is lost and the nutrition suffers. This state may keep up a longer or shorter time or even terminate in dementia. It is to this class of cases that can be attributed the large number of suicides during the pandemic of influenza. Mania developing during convalescence, about a week after defervescence, generally has a favorable prognosis. A latent tendency to progressive paralysis, dementia praecox, or a manic-depressive psychosis may be roused to activity by intercurrent influenza, or an existent phase aggravated.

Influenza.—Bassoni remarks that influenza is still present in many Italian cities, still claiming numerous victims. In the cases with complications in lungs and bronchi which do not clear up rapidly, he has found very useful injections of 2 c.c. of 10 per cent. camphorated oil with addition of 0.10 gm. guaiacol, one at 10 a. m. and one at 5 p. m. Several case reports show the prompt benefit even when the bronchopneumonia was due to secondary infection, or the case was simple influenza. The effect in his cases was so good that he is inclined to assume a specific action on the disease. The fever drops and all the symptoms abate. He supplements the injections with revulsion to the chest, proctoclysis, digitalis, or other measures as indicated. The diuretic action of the proctoclysis aids in clearing out toxins. On account of the minute doses, this treatment is absolutely harmless, he declares, and he knows of no contraindications.

Quinin in Prophylaxis of Influenza.—Betti relates that among the 1,100 malarial soldiers taking treatment at the malaria hospital on Lake Como, only five contracted influenza and they had it in a mild form.

Cysticercosis in Young Girl.—De Tommasi reports that an apparently healthy girl required amputation on account of a traumatic fracture which had refused to heal and the temperature kept high. At the amputation the subcutaneous tissue was found studded with vesicles of *Tenia solium*. There had been no symptoms at any time indicating the presence of the tenia or cysticercus.

Riforma Medica, Naples

February, 1919, **26**, Medical Section No. **2**

*Adiposis Dolorosa. E. Mingazzini.—p. 49.
*Non-Nephritic Albuminurias. I. Romanelli.—p. 62.

Adiposis Dolorosa.—Mingazzini reports the case of a man of 29 who in the course of a thyroid adenoma developed painful lipomatous nodules at various points, along with slight asthenia, irritability and depression. After excision of the tumor in the thyroid, these symptoms materially retrogressed. In the 100 cases of adiposis dolorosa in women on record the thyroid was incriminated in 19, the pituitary in 5, and the ovaries in 5. No appreciable cause could be detected in 70 cases. In the 21 cases on record in men, the thyroid was incriminated in only 2, the pituitary in 4, both together in 3 and the testicle in one. No cause was apparent in 11. In the case here reported, there was a limited zone of cells in the thyroid with a chromaffin character, the altered secretion of which has been regarded as one of the contributing causes of the disease. Three pages of closely printed bibliography conclude this review of the connection between the endocrine system and adiposis dolorosa.

Non-Nephritic Albuminuria.—Romanelli emphasizes the importance of ascertaining the exact cause of the albuminuria. When the patient is restricted to a milk diet, he warns that it should never be kept up longer than two or three weeks. Bed rest is indispensable in some cases, but Teissier found in one case that even four months of bed rest failed to modify the orthostatic albuminuria. Moderate exercise and hygiene, avoidance of constricting belts, garters or corset are necessary and studying may have to be stopped on account of the mental strain and fatigue. Tonics, out of door life or hydrotherapy may be indicated, but in any event medical supervision must be maintained. The prognosis of albuminuria accompanying nervous and mental disease or emotional stress depends on the fundamental disturbance. When it is due to functional nervous disturbance it may readily subside but may reappear with equal readiness. This form of albuminuria should not be accepted in the diagnosis until all other causes for it have been eliminated. A candidate for life insurance can be accepted, but the extra risk from the lesser resisting power of the kidneys must be borne in mind. Among 308 obese persons he found albuminuria in 20 per cent. Traces of albumin up to 0.5 per thousand are common in the obese, even in those apparently free from gout, arteriosclerosis, alcoholism and hypothyroidism. In a group of 407 insured persons weighing 10 kg. or more above normal and with girth over six tenths of the height, the average age at death was 47 years and 10 months, while the other insured died at the average age of 50 years and 1 month. The proportional mortality from kidney disease in all the insured averaged 9 while it was 13.8 among the obese. He analyzes conditions further with albuminuria in the various constitutional and infectious diseases and intoxications, acute and chronic, and in the pregnant, and discusses the various views as to acceptance for life insurance. A questionnaire was sent to fifty different life insurance companies, and thirty-one described their practice. Romanelli's extensive experience in this line has convinced him that candidates with albuminuria can be accepted, as he explains, with an extra premium varying with the type of the albuminuria. This extra premium can be very small with the albuminuria of puberty, after muscular exertion, the orthostatic, and the lordotic forms, with the maximal premium for albuminuria from arteriosclerosis. The family history, longevity, kidney disease, the personal history, constitution (obesity, extreme thinness), and the blood pressure are all important. In 295 fatal cases of nephritis among the insured in one company, 54 died between 50 and 55; 40 between 61 and 65, and 20 between 66 and 70, with 4 over 75 and 4 under 30. In 99 cases the policy had run from one to five years; in 68 from ten to fifteen years; in 63 from sixteen to thirty, and in 4 for over thirty years. The general statistics give the age of the greatest mortality from kidney disease as between 51 and 55.

Riforma Medica, Naples

Feb. 15, 1919, **35**, No. 7

*Influenza at Parma. E. Ruggeri.—p. 126.
*Referendum on Influenza. P. Guizzetti.—p. 132.
The Latin Spirit and the Art of Surgery. J. L. Faure.—p. 140.
Some of the Problems of the Day. A. Ferrannini.—p. 141.

Influenza.—Ruggeri concludes his long study of influenza by emphasizing the rarity of the influenza bacillus and the frequency of a mixed virus. This association of bacteria explains the proteiform set of symptoms, the bronchorrhagia and characteristic changes in the physicochemical properties of the blood which he describes in detail. The cases with the diplococcus and staphylococcus were the gravest forms, and it was in these cases that the antihemolytic power of the serum was lowest, as also the sensibility of the corpuscles.

Influenza.—In continuing this referendum, Guizzetti, describing the epidemic at Parma, states that the influenza bacillus was found in the bronchi in fourteen of twenty-seven cadavers, but none could be detected anywhere in eleven. In some cases he found an infarct in one lung, evidently from thrombosis, the result of secondary infections, to which also most of the pulmonary lesions can be ascribed. In contrast to the 1890 epidemic, he was impressed with the present marked tendency to hemorrhages in the air passages and the comparative rarity of nervous prostration following the disease.

Archivos Latino-Am. de Pediatria, Buenos Aires

September-October, 1918, **12**, No. 5

*Child Welfare Work in Brazil. C. Ferreira.—p. 405.
*Ataxia with Spasmophilia. F. de la Torre.—p. 430.
Iodized Vaccine Therapy of Typhoid in Children. R. Berro.—p. 434.
Deformity of Heart and Hemiplegia with Mongolian Idiocy. M. A. Ugón.—p. 439.
*Typhoid Spondylitis. V. Zerbino.—p. 442.
Subacute Meningitis. J. Bonaba.—p. 450.
Acquired Syphilis in Child of Two. C. Pelford.—p. 452.

Child Welfare Work in Brazil.—Ferreira's article is the official report for 1917 of the section for protection of young

children in the public health service of the state of S. Paulo, Brazil. He laments that there is only one *consultorio* for nurslings while Montevideo has seven, although the population is smaller. S. Paulo has a high birth rate, 36 per thousand, and it should have a *consultorio* for each 100,000, which would give it five. He expatiates on the fine results attained with the prizes given for the most robust children and for attendance at the infant consultations. Prizes to nursing mothers are particularly useful, and should form part of the routine of every infants' dispensary or *consultorio*.

Ataxia with Spasmophilia.—The boy of 3 had been having for nearly a month from one to thirteen attacks daily of clonic convulsions beginning in the face and extending to the extremities. The speech was peculiar, resembling the slow scanning speech of sclerosis in patches, and the incoordination in the voluntary movements was extreme. Treatment was begun in March, 1916, with 20 per cent. magnesium sulphate by subcutaneous injection, with chloral by the mouth and in enemas. In the first two weeks the convulsions became more numerous, up to thirty a day. Then they gradually declined and he has had none since May, 1916, and has seemed normal, even robust, during the years since. No details as to dosage or length of course of treatment are given.

Typhoid Spondylitis.—Zerbino remarks that the rarity of typhoid spondylitis confirms the truth of the saying that we find only what we look for, and we look for only what we know about. This typhoid spondylitis is encountered usually in mild or moderate cases of typhoid. The onset is sudden and the course rapidly progressive. The predominant symptom is the acute, violent pain, continuous, with paroxysmal exacerbations, generally localized in the lumbar regions, radiating to the abdominal wall and legs. It is often ascribed to overexertion or chilling during convalescence. It develops during the typhoid or convalescence or a few weeks or months after recovery. Pressure on the vertebrae, especially on the sides and front, brings on the pain. There may be a swelling in the lumbar region and even suppuration. In some cases girdle pains, sciatic neuralgia and muscular paresis complicate the clinical picture, with incontinence. The Kernig and Lasègue signs are common but not the Babinski. The course is slow but progressive. Repose for two or three months generally brings the subsidence of the symptoms, although the affection may keep up for a year or more with intervals of latency. Lumbar puncture shows the fluid under high tension but it is limpid, with high albumin content but no or very slight lymphocytosis during the acute phase. His patient was a girl of 12 who had had typhoid two months before and complained of pains and inability to use her legs. The lumbar pains developed early in convalescence. The pain kept her awake at night and there was soon incontinence of urine. No treatment was given but bed rest, and complete recovery ensued. On getting up the twentieth day, the pain returned but subsided under two more days of bed rest. After the end of the month she was allowed to get up for a time every day, and the ninth week was up all the time as the spine was apparently normal. The diagnosis was confirmed by the history of typhoid, the positive seroreaction and the favorable course.

Brazil Medico, Rio de Janeiro

Jan. 18, 1919, **33**, No. 3

*Acquired Feeblemindedness. H. de B. B. Roxo.—p. 17. Conc'n.
*Syphilitic Trigeminal Neuralgia. Brito e Silva.—p. 19.
Sputum-Vaccine Therapy of Influenza. U. Paranhos.—p. 20.

Acquired Mental Impairment.—Roxo declares that the symptoms of dementia praecox are liable to subside under treatment but the mind is left impaired, and he always warns the family of this contingency. Infectious diseases may leave the patient less intelligent than he was before. In some cases of postpuerperal psychoses the patients themselves realize that their mental capacity is somewhat reduced. In another case this mental impairment followed whooping cough. Under treatment for syphilis, certain cases of delirium which seemed to be permanent have retrogressed but some mental impairment is always left. Small doses of neoarsphenamin have proved exceptionally useful in these conditions. It seems to free the nerve cells from the toxin and tone them up. Sodium nucleinate and sodium arseniate seem to have a similar action, combating the toxic disturbance in the metabolism of the nerve cells. These or their equivalent or an organ extract should be tried in all cases of acquired mental impairment, from the toxic products resulting from some upset in the balance of the endocrine system or toxi-infection of other nature.

Syphilitic Trigeminal Neuralgia, etc.—Brito e Silva discusses the various manifestations from the fifth nerve for which syphilis may be responsible. The neuralgia grows worse at night, and this, in connection with the inefficacy of drugs which usually relieve neuralgia, point to syphilis, and this presumption is confirmed by the rapid cure under specific treatment.

Gaceta Medica de Caracas

Jan. 15, 1919, **26**, No. 1

*Oxytocic Action of Quinin. L. Razetti and others.—p. 1.

Oxytocic Action of Quinin.—Razetti publishes an appeal to physicians practicing in malarial regions asking whether they have given quinin to pregnant women, and whether they had noted any oxytocic action from it during parturition, and whether they attribute any abortions or premature deliveries which they may have observed to the malaria or to the quinin. Ayala says that during his sixteen years of practice in a malarial region he gave quinin to pregnant women and never noted any elective action on the quiescent uterus. When the uterus is already contracting, he thinks that quinin tends to make the contractions more vigorous. Razetti is an obstetrician in a malarial region, and his experience is against the assumption of any oxytocic action by quinin at any time. He is convinced that others who state the contrary have mistaken the abortive influence of the malarial, typhoid or influenza infection for the action of the quinin. When there are signs of impending abortion from the influence of malaria he gives quinin freely, as this as yet is the only means to dominate the malaria, the true cause of the abortion. Ruiz is convinced that nothing but the quinin was responsible for the abortion in a case he describes in which a young and robust woman, four or five months pregnant, contracted malaria on a trip, but the fever was not high, and treatment was begun at once. A few hours after she had been given one or two large doses of quinin, labor pains and vaginal hemorrhage indicated impending abortion. Abortion is comparatively common in malaria, typhoid, etc., when the disease is well under way, but never in the incipiency of the disease. Hence he reiterates that we must accept a possible oxytocic action in this case and in certain women. Machado, on the other hand, from fifty years of practice, including fifteen in a hotbed of malaria, insists that it is impossible for quinin to have any oxytocic action as he always gave it freely regardless of pregnancy and impending abortions, and never had to regret having done so.

Jan. 31, 1919, **26**, No. 2

*Influenza at Caracas. F. A. Risquez.—p. 13.
*Influenza at Barlovento. E. P. de Bellard.—p. 18.

Influenza in Venezuela.—Risquez relates that fully 75 per cent. of the 100,000 inhabitants of Caracas developed influenza in October and November. The death rate was higher than elsewhere, compared with the population, but much lower than in many places in comparison to the numbers attacked. The corresponding figures in the American army, he says, were 1.3 and 6.3 per cent., while at Caracas they were 1.4 and 1.9 per cent. He was impressed with the number of cases of relapse, the symptoms returning after three or five days of apparent recovery. These relapses occurred only in those who had got up out of bed and become chilled. He never witnessed any pulmonary complications in patients who stayed in bed three, four or five days after defervescence. He adds that as 80 or 90 per cent. of the cases run a mild course of only three days, and as the disease seems to confer immunity, and as public and individual prophylaxis is scarcely realizable, the attention must be focussed on warding off grave complications.

In de Bellard's experience in the Paez district, 63 per cent. of the inhabitants had the disease and 15 per cent. of the cases involved the lungs, with a mortality of 25 per cent. in this group. In one town, 2.31 per cent. of the inhabitants died. About 78 per cent. of the deaths were in persons under 30. The pulse in the grave cases suggested suprarenal insufficiency or resembled that of traumatic shock. An intestinal choleriform type was comparatively common. It did not respond to emetin.

Medicina Ibera, Madrid

Jan. 18, 1919, **6**, No. 63

*Acute Nephritis. S. Pascual.—p. 49. Cont'n.
*Influenza. IV. R. Velasco.—p. 54.
Is Vision Possible Without Eyes? G. Beritens.—p. 55.

Acute Nephritis.—Pascual passes in review the whole field of acute nephritis from the brief and curable form manifested by albuminuria, tube casts and oliguria, as in typhoid, and the nephritis that speedily kills from anuria, as with mercuric chlorid poisoning. Tuberculous nephritis may begin with the usual onset of acute nephritis but the polyuria up to 2 or 3 liters is characteristic, and inoculation of guinea-pigs clears up all doubt. Syphilitic nephritis is distinguished by the intense albuminuria, the extensive edema and the retrogression under specific treatment. Nephritis in scarlet fever may first manifest itself with convulsions, or with intense edema or albuminuria. In a recent case of mercuric chlorid poisoning, the anuria was accompanied by coma alternating with delirium, and there was 0.3 gm. of urea per thousand in the blood. Death occurred the fifth day without edema or uremic symptoms.

Influenza.—Velasco states that metrorrhagia was noted in 62 per cent. of his cases of influenza in women. Abortion or premature delivery was common and often fatal, but the fetus was living when born. The congestion in the uterus entailed hemorrhage which acted like a foreign body, leading to contraction and expulsion of the uterus contents. He comments on the exceptionally high death rate of physicians from influenza. They come in contact with the graver cases, with the more virulent germs, and are more exposed to secondary infection than other people.

Progresos de la Clinica, Madrid

January, 1919, **7**, No. 73

*Epitheliomas of the Hand. A. Piga and A. Ferrán.—p. 5.
*Oxaluria and Effects on the Nervous System. C. Juarros.—p. 21.
Vacuum Extraction of Cataract. J. S. Fernández.—p. 35.
*Induced Diplopia. J. S. Fernández.—p. 37.
Cervical Ribs. A. Perera.—p. 40.
*Eclampsia and Venesection. V. Aza.—p. 44.

Epitheliomas of the Hand.—Piga and Ferrán declare that radiotherapy has been too long neglected in treatment of epitheliomas of the hand. Surgical measures are generally advocated, but they insist that radiotherapy should be given the preference in certain cases. They review the history of such lesions from 1757 to date, and the anatomic and histologic findings, with illustrations of the normal and the pathologic details. Epithelioma is more common in men than in women, and on the back of the hand rather than on the palm. They have encountered about three in 125 cases of superficial cancer, but as a rule they are observed only in about 1 or 2 per cent. In treatment, a combination of roentgen and radium exposures and surgery has given good results in some cases. With melanic epitheliomas they advise to abstain from radiotherapy, although Béclère has reported the cure under it of a melanic sarcoma. The consensus of opinion, however, is against it. If the cancer does not show prompt improvement under the radiotherapy, they advise recourse at once to surgical measures. Electrocoagulation is contraindicated for these lesions as there is very little soft tissue in the region, and the tendons resist the procedure as they determined on the cadaver. It is also liable to make too much demands on the patients as they are usually elderly and debilitated. For this reason, also, great care must be taken not to allow the dressing to compress or constrict the parts too much. They warn further that every suspicious wart on the hands should be submitted to radiotherapy. They append considerable bibliography.

Oxaluria.—Juarros describes ten cases in which neurasthenia or other nervous symptoms accompanied oxaluria. The latter may be of alimentary origin, or may be a consequence of hyperchlorhydria or intestinal autointoxication or diabetes, or there may be a constitutional tendency to neuroses, aggravated by the oxaluria, or the latter can be traced to the endocrine system. His cases are examples of these different types. In the cases with hyperchlorhydria, correction of this banishes the oxaluria, and with this the nervous disturbances for which it was responsible, but nervous disturbance from other causes persists unmodified. Regulation of the diet will reveal and cure alimentary oxaluria. In two of the cases the oxaluria aggravated preexisting nervous disturbance, and these became attenuated but did not disappear altogether under treatment of the oxaluria. In one group of cases, the oxaluria induced phosphaturia. Treatment of the latter alone is futile as the oxaluria is solely to blame; it may even aggravate the oxaluria and its resulting disturbances. In treatment, foods liable to produce oxalic acid should be avoided; this includes gelatinous meats, pigs' feet, giblets and shell fish; stimulants, acids and liquor, and foods rich in oxalic acid, spinach, cress, peppers and prunes. Lime salts, he continues, promote the formation in the intestines of an insoluble calcium oxalate, while magnesium salts neutralize gastric acidity and help to keep the oxalic acid dissolved in the urine. Sodium, potassium and magnesium citrates form a double salt with calcium. He adds that acid sodium phosphate in large doses may help to dissolve oxalate calculi.

Diplopia as Optical Illusion.—Santos Fernández calls attention, with illustrations, to the peculiar illusion noticed when the tips of the fingers are touched together, held about 30 or 40 cm. from the face, and then they are gradually drawn apart a few centimeters. Between the tips there appears a mirage of the tips, partly bridging the space, and remarkable in that the tips point in opposite directions from the nearest tips.

Eclampsia and Venesection.—Aza warns that venesection is called for in eclampsia only when the blood pressure is abnormally high. Enough blood should be drawn to reduce the pressure to normal, and the physician should always consider the advisability of saline infusion afterward.

Revista de Medicina y Cirugia Practicas, Madrid

Jan. 21, 1919, **122**, No. 1539

*False Cancers in Stomach and Rectum. J. Blanc Fortacin.—p. 65.
*Analgesia for Inoperable Cancer. J. Blanc Fortacin.—p. 70.

False Cancer in Stomach and Rectum.—The symptoms and roentgen findings in Blanc Fortacin's case indicated a cancer in the lesser curvature of the man of 44. Gastrectomy was contemplated, but then the man's child was seen for the first time. The evident signs of inherited syphilis gave the clue to the father's lesion, and under specific treatment the supposed cancer disappeared completely. The Wassermann reaction confirmed the diagnosis. In another case the stenosis from a severe presumably cancerous ulcerative process in the rectum compelled an artificial anus. This relieved the rectum and it began to heal, but further symptoms seemed to show that the rectal process had invaded the adjoining abdomen. A tumor and enlarged glands could be palpated and the debility was extreme. Vigorous treatment as for syphilis gave no relief, and as a last resort heliotherapy was applied to the abdomen as this could do no harm although no benefit was anticipated from it. The tumefaction in the abdomen subsided under it while the rectal lesion continued a progressively favorable course. The abdominal tumor must have been an isolated connective tissue lesion, secondary to the rectal lesion, which probably was of tuberculous nature. The heliotherapy modified favorably the abdominal lesion by direct action and, indirectly, the rectal lesion by the tonic and antiseptic influence from the actinic rays. These assumptions were confirmed by the course of the case. The heliotherapy could not have exerted such a beneficial influence, however, if it had not been for the preceding operation to divert the feces and give the rectum a chance to heal.

Analgesia for Inoperable Cancer.—Blanc Fortacin reports prompt and durable relief of the unbearable neuralgic pains

accompanying extensive pelvic cancer. He accomplished this by intraspinal injection of 2 c.c. of a 10 per cent. solution of quinin and urea hydrochlorid. During the twelve days to date of writing the relief from pains has been so great that morphin has not been required. Before this the woman had required repeated injections of morphin. The intraspinal injection induced a transient febrile reaction, with headache and vomiting, but there were no motor or vasomotor by-effects.

Jan. 28, 1919, **122**, No. 1540

*The Oculocardiac and the Nasocardiac Reflexes. M. Bañuelos and R. A. Ortiz.—p. 97.

The Oculocardiac and Nasocardiac Reflexes.—Bañuelos and Ortiz report the results of testing fourteen persons repeatedly for the oculocardiac and the nasocardiac reflexes. They found them both inconstant in the same person at different times, but the nasocardiac reflex was more constant and more pronounced than the other.

Revista Medica del Uruguay, Montevideo

November, 1918, **21**, No. 11

*Sarcoma of the Middle Ear. E. Regules (hijo) and J. M. Alonso. —p. 665.
*Paroxysmal Tachycardia and Menstruation. F. B. Del Pino.—p. 674.
Generalized Trychophytosis in Three Months Babe. J. May.—p. 680.
*Trichinosis in Man. T. Regules.—p. 681.
Coincidence of Nodose and Polymorphous Erythema. B. Vignale. —p. 693.

Sarcoma of the Middle Ear.—Regules and Alonso say that the case they report is the first case of sarcoma on record in which the diagnosis of cancer of the middle ear was made before the tumor had invaded the auditory canal or the external portion of the mastoid. With Grasser's case of endothelioma and Neumann's of metastatic adenocarcinoma, it forms a group of three cases in which the membrane was intact. Their patient was a woman of 35 with left peripheral facial paralysis and trigeminal neuralgia with total deafness on that side. There was nothing to suggest an intracranial tumor. The tympanum was red but there was no discharge. Paracentesis caused profuse hemorrhage and gave the sensation of a tumor mass filling the tympanum. The operation showed that the very small vascular tumor penetrated a dehiscence in the bone but the walls and ossicles were otherwise apparently normal. The wound was left open for the purpose of applying radium treatment. The case is compared with 38 on record, including 19 of epithelioma, 14 of sarcoma, and 2 of malignant cystadenoma. The tendency to metastasis is slight, and the lymph glands are seldom involved. Only 4 of the above cases presented manifest metastasis in cerebellum, lung or ribs or involvement of the glands.

Paroxysmal Tachycardia.—Del Pino's patient is a woman of 48 who had always been healthy until six years ago when a child in her arms was killed by a stray bullet during an Easter celebration. Soon after this, she noticed occasional attacks of tachycardia with fatigue and sense of oppression in the chest. Finally they returned regularly at each menstruation. The symptoms disappeared with the menstruation but returned each month with it. There was no fever, no tendency to goiter, but the pulse was uncountable and the heart beat 170. Treatment consisted of rest in bed during the paroxysms with digitalis to ward off dilatation of the heart during the tachycardia, supplemented with ovarian treatment.

Trichinosis.—Regules describes a case in a man of 43, healthy until recently, with seven healthy children. It is the first case recorded in Uruguay although the disease has long been known in swine there. Probably certain human cases have been labeled typhoid; the diazo reaction is positive; the spleen may or may not be enlarged, and Stäubli has reported cases with rose spots suggesting typhoid. Differential points are the edema in the face, especially in the eyelids, and the pains and intense and persisting rigidity of the muscles, the abolition of the knee-jerk, Kernig's sign, and leukocytosis, but eosinophilia of from 20 to 60 or even 80 per cent. is the most characteristic sign. Serum diagnostic tests with an alcoholic extract of trichinae from the muscles have also proved instructive.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

Jan. 25, 1919, **1**, No. 4

*The Electrocardiogram After Heart has Stopped Beating. W. Einthoven and F. W. N. Hugenholtz.—p. 310.
*Epidemic Typhus on Island. Aldershoff and Broers.—p. 319.
*Multiple Cases of Mongoloid Idiocy in Family. W. M. van der Scheer.—p. 328.
Paratyphoid B or Colon Bacillus? J. S. Rudelsheim.—p. 336.
Poisoning from Homeopathic Remedy. B. D. De Haas.—p. 338.

The Electrocardiogram After the Heart Stops Beating.—Einthoven and Hugenholtz have confirmed the statement of Mines, Noyons and others to the effect that the electrocardiogram record keeps on long after the index has stopped recording any muscular contraction in the heart. This is generally accepted as testifying to the mutual independence of the muscular contraction and the electric waves, but later research here reported apparently disproves this. The electrocardiograph is extremely sensitive, while the contrivances hitherto used for recording the muscular contractions are much less sensitive, and the impulse of the heart beat is not enough to overcome the friction and inertia of the comparatively clumsy recording instrument. They give an illustrated description of a simple apparatus in which a long index is held in a copper cap soldered to a fine wire stretched taut between two thumbscrews in a small open frame. By turning the thumbscrews the index is raised or lowered, and this tightens a thread which is tied to the index, the other end of the thread fastened to the ventricle or auricle. The whole is extremely light and sensitive, with the minimum of friction and inertia. With this delicate instrument the contractions of the heart are recorded. They keep pace step by step with the electrocardiogram record, rising and falling synchronously, and with parallel intensity throughout. The research was done on the isolated frog heart under the action of different poisons or other influences. The tracings reproduced demonstrate that the mechanogram and the cardiogram are indissolubly connected with each other. A factor that may have contributed to the hitherto prevailing erroneous interpretation of the apparent arrest of the heart beat, while the electric phenomena kept on, is that, under the influence of the drugs used in the research, both the heart beat and the electric waves may have been modified so that one or the other or both may have presented an abnormal course.

Epidemic Typhus on Island.—Aldershoff describes a small epidemic of typhus on the island of Urk for which no source of infection could be discovered except that a similar epidemic had occurred on the island thirty years before, with occasional cases since. He remarks that pediculosis is universal among the 3,000 inhabitants of the island, and the small spread of the epidemic suggests immunization from previous attacks. He was impressed by the large proportion of mild ambulatory cases, but a few very severe cases testified that the virulence of the germ was not always attenuated, as in Brill's disease. Another peculiar feature of the epidemic was that the agglutination with the Weil-Felix proteus bacillus strain was constant and pronounced, but it was almost paralleled by the agglutination of an old strain of what was supposed to be paratyphoid A.

Familial Mongoloid Idiocy.—Van der Scheer has been able to find on record only eleven families in which more than one of the children presented mongoloid idiocy. But the Holland town of Lisse has two families in which there are two or three mongoloid idiots. In one of the families two idiot girls were born and then three normal sons. The parents were young and healthy, but the woman had been severely frightened by a dog at the third month of her first pregnancy, and another fright was experienced at the sixth month of her second pregnancy. In the other family, two boys and one girl are mongoloid idiots while two other boys are normal, one the first born and the other the last born in the family. The mother's father had been a habitual drunkard and her grandmother and an uncle had been mentally deranged. No instances of multiple occurrence of idiocy are known in the families of eight idiots in the Netherlands State Institution for the feebleminded. The article is illustrated, and Van der Scheer urges examination with special care of the stillborn children and miscarriages in families with a

mongoloid idiot; also research on the influence of emotional stress on the course of a pregnancy.

Mededeelingen v. d. Burg. Geneesk. Dienst, Batavia

1919, No. 1

*Hygienic Conditions in United States, Panama and Cuba. C. W. F. Winckel.—p. 1.

Hygiene in Panama, Cuba and the United States.—Winckel is a health officer in the Netherlands East Indies, and the Netherlands minister for colonial affairs sent him to this country to study conditions here. His illustrated official report deals mainly with measures for prophylaxis of malaria, plague, hookworm and typhoid fever, besides the eradication of yellow fever in Cuba and Panama, and the general hygiene of the Canal Zone. The trip was made in the first half of 1917 on a year's leave of absence. The daily papers in this country mentioned at the time his presence at different points, conferring with the public health authorities and investigating their methods. His report fills eighty-four pages, written in parallel columns of Dutch and English. He remarks of the public health service in Cuba that possibly it owes its model efficiency to the fact that the chief of the service is a member of the cabinet, and hence a person of authority, entirely free from municipal and communal jurisdiction. Panama and Colon are likwise managed from the central administration office of the Canal Zone.

Kitasato Archives of Experimental Medicine, Tokyo

December, 1918, **2**, No. 3

*Japanese River Fever. T. Kitashima and M. Miyajima.—p. 237. In German. Conc'n.
Bacteriology of Influenza. I. Okawara, T. Tanaka, Y. Watanabe, R. Koyama and T. Sato.—p. 335. In English.

Tsutsugamushi Fever.—This concluding instalment of this monograph by Kitashima and Miyajima is accompanied by eight plates, most of them colored, showing the acaris responsible for Japanese river fever, its habitat, etc. The extensive research on the therapeutic aspect gave constantly negative results. Hence attention must be centered on individual prophylaxis to protect against the bites of the mite. They expatiate on the resemblance between exanthematous typhus, Rocky Mountain spotted fever and this tsutsugamushi disease: The type of the fever is similar, keeping on a high level when the maximum of 40 or 41 C. is reached; the eruption; the character of the virus which has little resisting power against physical and chemical actions, and cannot be filtered through porcelain; also in the nature of the causal agent, which is found in abundance in the blood, on the blood cells, especially the leukocytes; also in the mode of infection, the virus being inoculated by the bite of an insect or mite which must be regarded as the intermediate host. On the other hand, monkeys that have had tsutsugamushi disease contract typical typhus when inoculated, and vice versa. They add that although the virus cannot be filtered through porcelain yet it evidently belongs in the same group with the filtrate virus of yellow fever, dengue, etc. They cite seventy-three articles that have been published in Japan on the subject, and others published elsewhere on this group of diseases in reference to the etiology—a total of 165 articles. They have been studying the problem of the germ of this disease for fourteen years. The field mouse seems to be the natural host of the mite in question, but the spirochetes cultivated from the field mice do not seem to be pathogenic for other mice or for guinea-pigs. They add that the ultramicroscopic causal agent is still as much of a mystery as ever, leaving a wide field open for experimental medicine.

Mitteilungen a. d. med. Fakultät. d. k. Univ. Tokyo

Nov. 26, 1917, **18**, No. 3, German Edition

*Lipoid Cleavage Products in Spinal Cord. F. Shionoya.—p. 285.
*The Donath-Landsteiner Reaction. Y. Nakamura and S. Yabe.—p. 302.
*Japanese Drugs. W. Sakai.—p. 317.
*Acromegaly without Pituitary Tumor. S. Yamada.—p. 411.

This issue of the *Mitteilungen* was not received until March 7, 1919. A number of fine plates accompany Yamada's article and one Shionoya's.

Lipoid Cleavage Products in Spinal Cord.—Shionoya refers to the lipoid cleavage products in the secondary degeneration of fibers in the human spinal cord, giving a colored plate of the findings in one of eleven cases described. The patient in this case was a man of 32 with amyotrophic lateral sclerosis.

The Donath-Landsteiner Reaction.—Nakamura and Yabe report the findings with this reaction in relapsing fever, malaria, paroxysmal hemoglobinuria and syphilitic affections. The "cold hemolysis" was found in tabes, in relapsing fever and in progressive paralysis, so it is not peculiar to paroxysmal hemoglobinuria as hitherto accepted, and it may occur without the latter.

Japanese and Chinese Drugs.—Sakai relates the outcome of pharmacologic and experimental tests of four drugs that have been in use in Japan and China for centuries, ginseng, cnidium, ligusticum acutilobum and the root of the angelica anomala L.

Acromegaly Without Pituitary Tumor.—Yamada's patient was a young merchant, robust until at 17 he noticed that hands and feet were growing larger. On several occasions he presented edema, hypoesthesia of the calves and finally lassitude and fatigue, with death at 21 from acute beriberi. The pituitary was found apparently normal. Probably the entire polyglandular system was involved in the production of the acromegaly.

Norsk Magazin for Lægevidenskaben, Christiania

January, 1919, **80**, No. 1

*Influenza in Norway. Y. Ustvedt.—p. 1.
*Necropsy Findings in Epidemic Influenza. E. H. Hansteen.—p. 21.
*Streptococci in Influenza. T. Schønfelder.—p. 29.
*Rare Complications with Pseudo-Influenza. G. W. Keyser.—p. 35.
The War and Psychiatry. W. H. R. Rivers.—p. 47.
*Hypersusceptibility to Certain Drugs. C. Schiøtz.—p. 51.
*Drugs to Aid in Delivery. G. Benestad. Supplement, pp. 1 to 171.

Influenza.—Ustvedt relates his experiences at the Ullevaal Hospital up to September, 1918. There were 197 cases of influenza pneumonia, with 32.5 per cent. mortality. He reviews further the previous epidemics of influenza, beginning with the first in 1173. Since 1890 there have been cases reported every year from the 10,461 cases in Christiania in 1890 and 5,278 in 1901 to the lowest figure, 138 in 1906. The cases listed as influenza in the last few years may have been merely a catarrhal fever. This is the more probable as the cases were restricted to the winter months while influenza usually occurs at other seasons. The elderly in his district seemed to escape the disease in 1918.

Necropsy Findings in Influenza.—Hansteen relates from the same hospital that Pfeiffer's bacillus was very rarely encountered but a streptococcus was found very common, in some cases in pure culture in the lungs, in others in the heart or spleen. In many cases it was found in the lungs associated with staphylococci, pneumococci or other bacteria. Suppurative meningitis was found in some of the cadavers, hemorrhagic encephalitis in one, and acute verrucous endocarditis in four.

Streptococci in Influenza.—Schønfelder describes the streptococcus found in many of the cases at the Ullevaal Hospital. It was found often nearly in pure culture in the influenza lung, in the spinal fluid with influenza meningitis, in the blood, and in the pleural effusions. It was only slightly pathogenic for animals, which was also the case with Pfeiffer's bacillus.

Complications of Pseudo-Influenza.—Keyser has had 308 cases since last June of what he calls false influenza. He says that it resembles true influenza except for the bacteriologic findings. Among the complications encountered were pneumonia in two cases, conjunctivitis in fifteen; tuberculous epididymitis, herpes zoster and acute meningitis in one case each. One previously healthy man complained of trigeminal neuralgia and tenderness and swelling of large numbers of glands at different points.

Hypersusceptibility to Certain Drugs.—Schiøtz gives an illustrated description of a case of lymphosarcoma in a young woman in which, the day after beginning to take potassium

iodid, a severe pemphigus developed on hands and face, the vesicles suppurating. He theorizes to explain such an idiosyncrasy as an explosive catalytic process induced by the action of normal chemical organ products on the nervous system, the process started by the presence of some exogenous catalyzer, in this case potassium iodid. Waetzold has demonstrated that epinephrin and faradization have a much stronger effect after iodin than otherwise. Schiøtz recalls that the symptoms with such an idiosyncrasy differ entirely from those with an intoxication. Notwithstanding the variety of the symptoms induced by hypersusceptibility to a drug or food, they all fit into the frame of disturbances resulting from an upset in the balance of the vegetative nervous system, as he explains in detail. Either the sympathetic or the autonomous system becomes impaired under the influence of the drug or food in question, and then the other system gets the upper hand and the symptoms follow. Persons with an unstable nervous system are peculiarly liable to develop these idiosyncrasies. Research in hospitals, etc., might reveal that women were more inclined to them than men. He has noticed further that there may be periods in which the vegetative nervous system is more unstable than at other times. A drug may be taken over a long period without intolerance, and then suddenly, if its administration coincides with some transient period of extra instability, the idiosyncrasy may become manifest. Menstruation eruptions and menstruation idiosyncrasies have been recorded. Anaphylaxis is an acquired specific hypersusceptibility, and the symptoms with an idiosyncrasy resemble in many points the clinical picture of anaphylaxis, and suggest that the same measures might prove effectual in each. Atropin has proved effectual in the heart and respiratory disturbances from morphin poisoning, and atropin has also been found to cure urticaria in some cases. Lewin asserted long ago that belladonna may enable persons to take potassium iodid who under other conditions are unable to tolerate it, but his statement was not confirmed by others. Nägeli has recently reported a case in which injection of an arsphenamin preparation was always followed by an eruption, but a preliminary injection of epinephrin warded this off. The analogy with anaphylaxis here is most striking, Schiøtz remarks. He discusses further the differential diagnosis of hysteria from idiosyncrasy, declaring that the latter is only one link in a long chain which includes asthma, serum sickness, acute circumscribed edema, certain forms of purpura, hay-fever and periodical vomiting with acetonemia. There is a wide field for research here. Cases should be studied by analysis of the urine (acetone), the blood should be examined for eosinophilia, leukopenia; noting the sex and the age as predisposing factors.

Drugs to Aid Delivery.—Benestad discusses quinin and pituitary extracts, with ten pages of bibliography, giving the details of 111 cases in which one or more of these drugs were applied. The maximal dose of pituitary extract, he reiterates, must never be higher than twice the ordinary therapeutic dose. As a rule, one injection during the dilating phase and one during the phase of expulsion are all that should be used. The therapeutic dose of pituitary extract should correspond to not more than 0.10 gm. of the gland substance. In 71 per cent. of his cases delivery proceeded spontaneously after a single injection of the pituitary extract. The failures were due to causes which the drug could not influence, extra large size of the fetus, rigid parts, etc. He advises operative delivery if the birth does not progress during the hour following the injection in the second stage of labor when the labor contractions are growing weaker. The effect seemed the same in primiparas and multiparas.

Svenska Läkaresällskapets Handlingar, Stockholm

Dec. 31, 1918, **44**, No. 4

*Deafmutism in Sweden. E. Bergh.—p. 507.

Deafmutism in Sweden.—Bergh's extensive investigation of deafmutism in the Malmöhus district revealed 383 deaf mutes, that is, about 8.4 per ten thousand inhabitants of that region. The proportion was 10.9 in the towns and only 6.8 in the rural districts. Only 28.2 per cent. of all were known to be congenitally deaf. Six pages of literature are appended and all this material is discussed from the economic, national, etiologic and social standpoints, as well as prophylaxis and treatment, the whole filling nearly 200 pages. In the district investigated, direct transmission of congenital deafmutism to the offspring does not seem to be much of a factor in deafmutism. On the other hand, deafmute marriages result in few offspring. Prohibition of consanguineous marriages would not accomplish much as the parties could get married in other countries or cohabit without marriage. The most important factor in deafmutism is seen by these researches to be infectious diseases, and it is against these that prophylactic measures should be directed.

Ugeskrift for Læger, Copenhagen

Jan. 16, 1919, **81**, No. 3

*Habitual Constipation. VIII, T. E. H. Thaysen.—p. 91. Conc'n.

Habitual Constipation.—Thaysen calls his method of treating habitual constipation the alaxative method. It is based to a certain extent on Dubois' principle but he does not accept Dubois' assumption that the constipation is the result of psychic inhibiting processes. The principle of treatment is absolute abstention from laxatives and training the bowels to move at a certain hour every day. Dubois advises suppressing the desire for defecation at any other time than the appointed hour, but Thaysen advocates heeding it and yielding to it whenever it may occur, but always going to stool regularly, at the appointed time every day, regardless of whether there is a desire or not. The idea that it is impossible for one to have a normal passage certainly aids in maintaining the constipation, and emotional stress might check bowel functioning for a brief time, but otherwise he does not believe in a psychic etiology for habitual constipation. Some even regard the matter from the opposite point of view, maintaining that habitual constipation is the cause of psychic disturbance, neurasthenia, etc. His distinction between what he calls habitual constipation and ordinary constipation was outlined in the summary in THE JOURNAL, March 15, 1919, page 838, of an earlier instalment of his article. He emphasizes that the danger from going a long time without defecation is not so great as generally supposed. He never witnessed any signs of inflammation even when a patient went up to fourteen days without stool.

He gives the patient a card with printed directions to rise, for instance, at 8; at 8:15 drink a glass of tepid boiled water; at 8:30 a light breakfast; at 9 go to the W. C. and strive to have a passage, devoting fifteen minutes to it if necessary. At 9 p. m. eat some stewed fruit; retire at 10. Of course these hours can be altered to suit the patient's habits, but always having the meals regular and ensuring plenty of sleep. If there is a desire for defecation during the day it is to be yielded to. This aids in recalling to life the torpid defecation impulse. If the main defecation impulse is found to come at some other hour than in the morning, this hour can be appointed for the regular time and everything done to make this the center of the training of the bowel. With this alaxative treatment, natural movements usually begin by the third or fourth day. If the feces are very hard at first, a small oil enema or cocobutter suppository will remedy this.

When dyspepsia accompanies habitual constipation it generally develops several years after the onset of the latter; the pain at the cardia comes on soon after or during the meal, and the position, secretion and motor functioning of the stomach seem to be normal, or there is some slight secretory anomaly (mainly in men), or motor disturbance (mainly in women). The constipation further is of the habitual type, that is, it became a settled habit before the age of 26 in women and of 31 in men. The dyspepsia depresses the vitality and this sets up a vicious circle. Anorexia in these cases is usually of psychic origin, and the patient must have his interest in food aroused. Psychotherapy here may prove more successful than the most skilful dietetics. If the alaxative treatment fails completely, the next best treatment is with rectal injection of warm oil, 250 c.c. to be retained over night. The introduction of this method has wrought a revolution in the treatment of constipation, he adds, but it has the disadvantage of being more symptomatic than causal.